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ABSTRACT

This document contains the following plenary speeches from the 1994 annual conference of the Pacific Telecommunications Council (PTC): "Forging New Links--Focus on Developing Economies" by Sir Donald Maitland of the Independent Commission for World-Wide Telecommunications Development (United Kingdom); "The Missing Link: Still Missing? The Continuing Role of the ITU in Telecommunications Development" by Pekka Tarjanne of the International Telecommunication Union; "Forging New Links Philippine Style" by Josefina T. Lichauco of the Department of Transportation and Communications (Philippines); "Telecommunications Liberalization--The Hong Kong Model" by Alex Arena of the Telecommunications Authority (Hong Kong); "Information Technologies--Present and Future" by Warren E. Falconer of AT&T (United States); "KDD's International Cooperation Activities under a Competitive Regime" by Kunishi Nosaka of Kokusai Denshin Denwa (Japan); "Telecommunications in the Pacific" by Ieremia T. Tabai of the South Pacific Forum Secretariat (Fiji); "The Co-Ordinating Role of APT in Promoting Telecommunications in the Asia Pacific Region" by Riluvan Shareef of the Asia-Pacific Telecommunity; "Compatible Roles of Government and the Private Sector in Fostering Telecommunication Development" by Derek H. Burney of BCE Telecom International, Inc.; and the abstract only of "Let's Take a Ride on the International Information Highway" by Mike Thurk of Digital Equipment Corporation (United States). The winner of the 1993 PTC research prize competition, "Telecommunications, Capabilities and Development: Towards an Integrated Framework for Development Communication" (Nikhil Sinha), is also included; this paper contains 54 references. (MES)

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Pacific Telecommunications Council Sixteenth Annual Conference

Edited by
James G. Savage and
Dan J. Wedemeyer

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PTC'94

PLENARY SPEECHES

AND

1993 RESEARCH PRIZE WINNING PAPER

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INTRODUCTION

In preparing for this 16th annual Pacific Telecommunications Conference, it came to our attention that the quality and calibre of the Plenary papers submitted were exceptionally promising. Clearly, this year's theme - "Forging New Links: Focus on Developing Economies" - galvanized and motivated the Conference Plenary participants. As a consequence, we decided it would be valuable to give the Plenary presentations their very own forum, and hence this publication came to be.

As Sir Donald Maitland notes in his Plenary presentation to PTC'94, telecommunications development has rapidly outpaced general economic development throughout the world. It has been gratifying to all in the telecoms field to see that telecommunications is now viewed universally as a central tenet of economic and social development. The most optimistic projections of the landmark 1984 Maitland Commission study, The Missing Link, could not have foreseen how quickly much of the world has been integrated into the global network, and how that network has itself evolved. But much work remains. Vast areas of the globe remain unserved or underserved; their economic development stalled in no small part as a result of this failure to communicate.

The Conference's other Plenary speakers address the specific development challenges in their countries and regions. Josephine Lichauco reviews telecoms development in the Philippines, a particularly interesting case study of new regulatory structures being put in place to fuel development. Irermia Tabai and Riluvan Shareef analyze developments at the regional level from, respectively, the South Pacific Forum Secretariat and the Asia-Pacific Telecommunity. As demonstrated by the PTC's own efforts, regional cooperation has been an important catalyst to telecoms development.

At the worldwide level, the International Telecommunication Union (ITU) has been a powerful force in identifying and highlighting the importance of telecoms development. As ITU Secretary-General Pekka Tarjanne notes in his presentation, "a new model of telecoms development has been launched which is based on entrepreneurship, competition, and private sector participation".

Several other speakers, from Warren Falconer of AT&T, Derek Burney of BCE Telecom International, Kunishi Nosaka of KDD, Mike Thurk of Digital Equipment Corp., provide overviews of how their enterprises have made telecoms development a priority and have, as a consequence, profited from a globalized perspective, wider market awareness, larger telecoms activity (and hence revenue), and a scope of activity unimaginable only ten years ago. Alex Arena of the new Hong Kong regulatory body OFTA (Office of the Telecommunications Authority) looks at the innovative regulatory model Hong Kong has chosen to oversee these rapid developments.

Finally, we are please to include within this publication the winning paper of the 1993 Pacific Telecommunications Council Research Prize. The author, Dr Nikhil Sinha of the University of Texas, USA, focused on the search for a wider explanation of the importance and value of telecommunications development. His paper bears close reading, for it centres on the developing country user's needs and motivation, and provides a framework for understanding the central importance of telecoms to development.

FORGING NEW LINKS - FOCUS ON DEVELOPING ECONOMIES

SIR DONALD MAITLAND
CHAIRMAN
INDEPENDENT COMMISSION FOR WORLD-WIDE
TELECOMMUNICATIONS DEVELOPMENT
UNITED KINGDOM

In choosing to focus at this Sixteenth Annual Conference on developing economies, the Pacific Telecommunications Council has taken a timely initiative. For several years now the economic tribulations of the major industrialised countries have tended to divert attention from the chronically poor quality of life in much of the developing world.

The disadvantaged nations first raised their collective voice when the leaders of twenty-nine Asian and African states came together at Bandung in April 1955 and, in so doing, conferred a personality on a political force which came to be known variously as the Third World, the South, or the Non-Aligned Movement. The economic ambitions of developing countries were expressed at the first Conference on Trade and Development in New Delhi in 1964, when the Group of 77 came into being. At a meeting of the Non-Alligned Movement in Algiers in 1973 these aims were enshrined in a the demand for a 'new international economic order'. The oil crisis precipitated by the Middle East war later that year obliged the international community as a whole to take seriously the demand of developing countries for a greater share of the world's wealth and fairer access to the products of man's ingenuity.

For various reasons - political, economic and social - the solidarity of the Group of 77 was short-lived. Yet the basis of the case they made remained valid - for the good reason that it was unanswerable. In another historical context President Woodrow Wilson concluded his message on the Fourteen Points with these words:

> An evident principle runs through the whole program I have outlined. It is the principle of justice to all peoples and nationalities, and their right to live on equal terms of liberty and safety with one another, whether they be strong or weak. Unless this principle be made its foundation, no part of the structure of international justice can stand.

That was over seventy-five years ago.

Considerations such as these were no doubt in the minds of delegates to the Plenipotentiary Conference of the International Telecommunication Union in Nairobi in the autumn of 1982 who charged the Independent Commission for World Wide Telecommunications Development with recommending ways of stimulating the expansion of telecommunications across the world. The mandate given to the Commission was essentially political. It recognised an inequity in a sector of cardinal importance for the future prosperity and security of nations; and, because potential remedies lay within the realms of the feasible, it foreshadowed progress of palpable benefit to individual citizens.

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It is nearly ten years since the Commission set out its prescription for achieving the objective of bringing all mankind within easy reach of a telephone by the early part of next century. In the interval the political context in which the Commission addressed its recommendations to governments, international agencies and the telecommunications industry has changed in ways none of us could have imagined in 1984. While the end of the cold war removed the threat of nuclear confrontation between the super-powers and restored basic rights to millions of people in central and eastern Europe and in southern Asia, it also released tensions which had been suppressed for over forty years. Here and there the consequences have been disastrous. In newly liberated parts of Europe and the Caucases tyranny has given place to war, destruction, hatred and fear. In Russia itself the difficult and dangerous search for political stability continues.

The high hopes that reconciliation between Washington and Moscow would at last enable the United Nations Security Council to play the role assigned to it in the Charter have been disappointed. In many countries of Africa and parts of Asia, as in former Yugoslavia, the killing goes on; too often it is the massacre of the innocents. Natural disasters, terrorism and the international drug traffic have also taken their toll.

Economic recession in much of the industrialised world has led to high levels of unemployment and the social distress which that entails. Nor is there any early prospect in Europe, at least, of a return to the high rates of growth achieved in the 1980's. Moreover, in the European Union economic divergence is more evident today than convergence. In such circumstances, it is not surprising that there has been a resurgence of nationalist sentiment, notably in Germany where the process of integrating two diverse economies has proved more difficult than was foreseen.

Elsewhere the picture is different. During the past ten years, countries in Asia and the Pacific have been comparatively immune from the economic and other misfortunes of other parts of the world. Some have advanced with astounding speed, reaching and sustaining rates of economic growth far in excess of their competitors. The vigour with which China has pursued its programmes of economic regeneration is another notable feature of the past decade. The fact is there for all to see: the balance of economic power is tilting, ever more rapidly, from the Atlantic basin towards the Pacific. The recent conference at Seattle of leaders from the Americas and east Asia seemed to take some Europeans by surprise. Commentators asked whether this meant the end of the North Atlantic partnership. One wonders where such people have been for the past ten or fifteen years.

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Over the past several years growth rates in most sectors, and especially those traditionally regarded as pillars of the world economy, have either been static or declined. The outstanding exception has been the telecommunications and information technology sector, which has continued its advance thanks to increased globalisation, the international shift towards services, the advent of new technology, declining costs and prices and de-regulation. Last year the market for international telecommunications services and equipment grew by some 13% - ten times the growth of the world's GDP. this was rather less than the 15% to 20% achieved in the late 1980s. It is of special interest that last year, and for the first time, new carriers contributed a larger share of the additional traffic than did the principal established carriers. This is evidence of the determination with which operators and manufacturers, despite the inevitable pain, have been exploiting the opportunities offered by de-regulation, privatisation and liberalisation which have transformed the structure of the industry. Already no less than 46 companies world wide are now in the private sector. Whereas in Europe the objective of privatisation has usually been to contribute to a reduction of budget deficits, in developing countries, and principally in Latin America and Asia, the motive has been to attract investment in order to expand existing networks.

These structural changes have obliged the major international companies to devise global strategies and, to this end, grand alliances are being formed. The most spectacular so far have been those involving AT&T and British Telecom.

The other instrument of change, of course, has been technological advance. Digitalisation, which is now almost universal, has been of special benefit to those developing countries which did not have an inheritance of out-dated equipment and have been able to leap-frog to the new technology. Ways in which the various systems have been used - terrestrial telecommunications, broadcasting, satellites - have become more sophisticated. We hear a lot today about multi-media. The latest generation of mobile equipment offers not only enhanced quality but also increased access to communications networks.

These developments are gratifying. Unfortunately the global picture is not uniformly encouraging. In some developing countries, for reasons with which we are only too familiar, little improvement has been possible. Natural and human disasters have taken their toll. According to a recent survey of 133 countries by the International Telecommunication Union (ITU), 70 countries had fewer than five exchange lines for every 100 inhabitants. The equivalent statistic for Chad was 0.07. These figures highlight the correlation between penetration, orteledensity as it is also called, and gross domestic product. Almost all countries with a per capita GDP of US$7,000 or more have a teledensity of more than 30 lines per 100 inhabitants. but most countries have a per capita GDP of US$2,000 and the teledensity of less than 5 lines per 100 noted by the ITU.

Elsewhere substantial progress has been made. The most ambitious programmes were those launched in China and India. Given their respective populations of 1.2 billion and 850 million, the immensity of the challenge facing the two governments is clear. This, however, is not the only good news. The Asia Pacific region contains six of the fastest growing telephone companies in the world. This has been achieved by exploiting all available technologies. Here too there are variations. Teledensities range from 49 per 100 in Hong Kong and 40 in Singapore to 2.7 in Thailand and 1.5 in the Philippines.

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Ten years ago the independent Commission recognised more than one disparity in the world wide distribution of telecommunications. The most striking was the concentration of three-quarters of all telephones in nine industrialised countries. Another was the important disparity between the more advanced developing countries - the oil producers and the larger more populous countries, such as Brazil and India - and the most disadvantaged countries, such as the countries of the Sahel. There was also a perceptible gap within developing countries between urban and remote rural areas. That these disparities persist today prompts two questions: What has been the response to the recommendations of the Independent Commission and how relevant are these recommendations today?

Those who served on the Independent Commission would undoubtedly be impressed by the progress made these past ten years in many parts of the world. In particular, they will have noted with satisfaction the extent to which the central message in 'The Missing Link' has been received and understood, namely that no developing country, hoping to provide a better life for its citizens wherever they may live and work, can afford not to invest in a comprehensive and effective telecommunications network. It is also gratifying that the governments of the two most populous nations in the world - China and India - have set about the immense task of expanding and improving their networks in ways which reflect many of the Commission's recommendations. Perhaps the most encouraging developments, however, have taken place in the Pacific Rim. The countries of this region have amply confirmed the Commission's belief that financing problems could be mitigated if developing countries were to create what the Commission described as "a climate generally conducive to inward investment, including adequate assurance of credit-worthiness".

The Commission's analysis of the problems facing developing countries remains valid and, despite changed circumstances, many of the Commission's recommendations, modified to take account of changed circumstances still provide an appropriate prescription. Progress has been made; but much remains to be done.

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How then should we view the prospects for forging new links over the next decade?

In the first place, it is reasonable to expect that most of the predictions about the expansion of telecommunications networks and the changes in the structure of the industry will prove reliable. Whereas in the industrialised world the challenge will be to find relevant and affordable uses for the immense capacity which is already available and which is likely to increase throughout the rest of the decade, the emphasis in developing countries will be on generating more capacity.

The expansion of capacity in the Asia Pacific region is likely to be the fastest in the world - a doubling of the lines by the year 2000 has been projected. China alone, where today there are 17 million lines, has set an official objective of increasing this to 100 million lines by the same date. In India, where three-quarters of the population of 850 million inhabit over half of a million villages, the Government has also set an ambitious target. While introducing value added services in urban areas, the plan to install a public telephone in every village by the end of the century and to begin the process by providing a pay-phone in each of the quarter of a million 'panchayat' villages - those which have a council of five persons. Good progress in expanding networks elsewhere in Asia, the Middle East and Latin America can also be expected. But the prospects for many countries in Africa are much less encouraging.

World wide the transformation of the telecommunications industry will certainly continue. The pace will increase. Over forty telecommunication companies are already quoted on the stock exchanges. Some observers believe that this total could double by the end of the century. Virtually all of Europe's leading operators will be wholly or partially ahead. The example of Argentina, Mexico, Chile, Venezuela and Peru, where majority shares in the national

telephone companies have been sold, will be followed in the immediate future by Brazil, Uruguay and Costa Rica. This progress can be expected to continue, for the good reason that the motive in Latin America is not so much to introduce competition but rather to facilitate modernisation of the systems.

Privatisation in the Asia-Pacific region has made a slower start. Singapore Telecom is first in line and it has been suggested that up to 20 others may follow. Further foreign investment, through 'build, operate, transfer' arrangements, is likely to be encouraged by successors in Thailand, India and the Philippines. These could serve as models for countries in Africa, especially those working in close consultation with the World Bank.

At the global level further rationalisation of the industry through competition, mergers and acquisitions can be expected.

Technology will have a major influence on the development of the telecommunications industry over the next decade. While the market for conventional public switch and transmission systems in central and eastern Europe and in Asia - notably China and India - will expand steadily, the more spectacular advances will come from exploiting the benefits of the newer technologies. Optical fibre, digitalisation, satellite and broadcasting systems will continue to improve access to communications channels and enhance their quality. But the contribution of mobile communications may prove the most effective. Already 30 million cellphones are said to be in use in 70 countries; falling prices could increase this total three-fold by the end of the decade. In the longer term mobile satellite systems, including low, intermediate and high earth orbit systems, could well form a significant component of a universal network. In the shorter term, such systems could meet the needs of the business traveller. They could also benefit remote areas of developing countries, for example where large-scale construction projects are being planned, or where mineral deposits are being exploited.

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The prospects for the telecommunications sector are clearly encouraging. As has been brilliantly demonstrated in the Asia Pacific region, developing countries can exploit the vigor and vitality of the industry. Success depends critically on the priority they hive to investment in this sector. But that is only the beginning. Governments may will find it rewarding to collaborate at regional levels over research and development, the choice of appropriate technology, and training. The right conditions exist for mobilising local and regional capital, for mutually beneficial joint ventures and for attracting the attention of the World Bank and the regional development banks. Experience in the more successful developing countries has shown that achieving the most effective results requires determination and ingenuity. Hopes cannot be high, however, that in the foreseeable future the expansion of the networks in Asia and Latin American will be matched in the most deprived countries, and especially those devastated by human and natural disasters. These cannot embark on the process of economic and social regeneration without substantial outside help. For the sake of the longer term it is important that these countries too accord this sector high priority when formulating their requests for aid and technical assistance. The innocent inhabitants of these tragic countries are a special case and they deserve special consideration by the international community.

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When they consider the prospects for forging new links over the next decade, those who make decisions in the telecommunications sector cannot ignore the wider context. What factors will influence the international economic and political environment?

If inward investment is a measure of prospects for economic growth, then a number of developing countries are well placed. In India, China, Mexico and Poland, for example, economic liberalisation will prove an increasing attraction for investors who, once they establish themselves, will discover the allure of the domestic market in these countries for a whole range of goods and services. If, as seems likely, returns on these investments begin to reach the levels of the 1960s, then developing countries will become increasingly more attractive to investors than most of the industrialised world.

What of the political prospects? The outlook world wide can best be described as uncertain. Here and there nationalism is resurgent. Despite reconciliation between the Palestinians and the Israelis, most long-standing disputes persist and new enmities have arisen. It would be unwise to expect all these problems to be solved overnight. At the same time as the need for closer economic and commercial links between regions has been recognised, the reassuring

political certainties of the second half of the century will increasingly be questioned. Likewise reservations about the nature of our societies will continue to be expressed. Respect for authority will continue to diminish. And this in turn will undermine the confidence of political leaders who are unlikely to be able or willing to articulate a vision of the world we will take into the next millennium.

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A final word. Human history has been marked by a continuous conflict between scientific ingenuity and the demands of the spirit - between the inexorable acquisition of wealth and knowledge of the one hand and the preservation of values on the other. Moreover, we have come to expect that to each of man's achievements there seems to be a counter. Advances in medical science have not emptied hospital beds; on the contrary. Economic prosperity has raised living standards and increased personal mobility but, in the process, the environment has been jeopardised. Television has brought the world into our homes, but has also, quite literally, put a face value on our political leaders.

The telecommunications industry has within its grasp an achievement of historic importance. A global network can indeed be a reality as we move into the next century. The sustained effort of which the industry has shown itself capable in these past ten years can surely provide all mankind with easy access to this network. Dr Pekka Tarjanne, the Secretary General of the ITU, echoed the sentiment of President Woodrow Wilson when he called on governments to recognise access to basic telecommunications services as a fundamental human right. The magnificent prize of universal communication will permit the acquisition world wide of wealth and knowledge and, in time, reduce inequities. It will be for all of us ensure that, when this prize has at length been won, the most precious human values are preserved.

UNION INTERNATIONALE DES TELECOMMUNICATIONS
INTERNATIONAL TELECOMMUNICATION UNION
UNIÓN INTERNACIONAL DE TELECOMUNICACIONES

Honolulu, 16 January 1994

THE MISSING LINK: STILL MISSING?

THE CONTINUING ROLE OF THE ITU IN TELECOMMUNICATIONS DEVELOPMENT

Dr Pekka Tarjanne
Secretary-General, International Telecommunication Union (ITU)

16th Annual Pacific Telecommunications Conference, 16-20 January 1994

Ladies and Gentlemen,

It is a pleasure and an honour for me to address this distinguished conference on a subject which is close to the heart of the International Telecommunication Union, namely the telecommunication development gap. This year, 1994, marks the tenth anniversary of the Maitland Commission Report entitled "The Missing Link" and this conference provides an opportune moment to revisit the main theme of that report, particularly as we have Sir Donald Maitland himself as one of the speakers.

The Maitland Commission report revisited

In 1982, the ITU Plenipotentiary Conference called for an Independent Commission for Worldwide Telecommunications Development to recommend ways in which telecommunications development could be improved. The Commission released *The Missing Link* report in December 1984. The title of the report referred to the unbalanced development of the worldwide telecommunications network due to the large gap between developed and developing countries and the fact that access to basic telephony is not possible for substantial parts of the world's population. For example, the report found that three quarters of the world's telephones were in just nine industrial countries and there were more telephones in Tokyo than the entire African continent.

The report made a number of specific recommendations for remedying the situation that fell into four areas:

1. Governments and development agencies should give a higher priority to investment in telecommunications.
2. Networks in developing countries should be made commercially viable.
3. Financing arrangements should take into account the scarcity of foreign exchange in developing countries.
4. The ITU should play a more catalytic role.

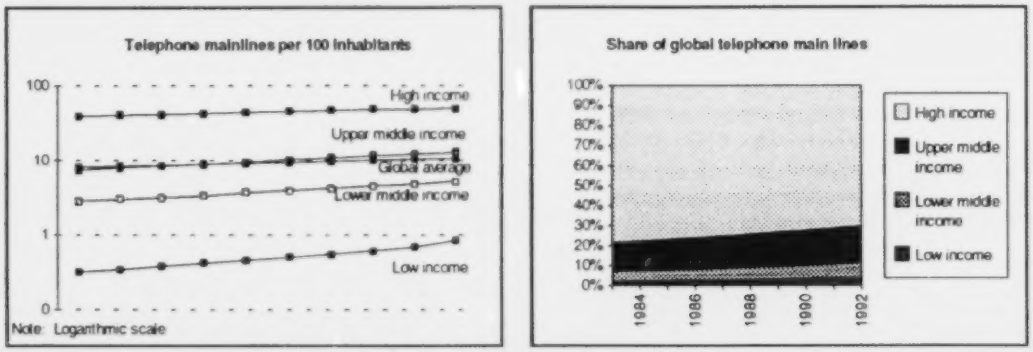
Progress towards meeting these recommendations since the release of the report has been mixed. Strong government commitment to the telecommunications sector has been a factor in most of the success stories of the last decade, though the support of development agencies has been uneven. "On paper" most developing country networks are profitable; however there are a number of internal and external factors which affect profitability and network development. Foreign exchange problems in many developing countries turned worse during the 1980s due to the international debt crisis. However, there are signs at the start of the 1990s that some of these problems have been resolved with a substantial net inflow of foreign direct investment, particularly in Latin America and in Central and Eastern Europe. The ITU itself has gone through a reorganisation in response to the changing telecommunications environment and now reflects better its co-ordinating role in telecommunications development.

Is the gap narrowing?

The year 1994 will also mark the first World Telecommunications Development Conference to be held in two months time in Buenos Aires. As part of our preparations for that conference, ITU has prepared a World Telecommunication Development Report which reviews progress made in the intervening decade since the Maitland Commission Report. The new report clearly shows that the **development gap** between high and low income nations still persists in telecommunications. Nevertheless, there is some evidence that it has narrowed over time. For instance, as Figures 1 and 2 show, those countries with a GDP per capita of less than US$10'000 have increased their share of global telephone mainlines from 22 per cent in 1983 to 30 per cent in 1992. They have also been growing at a much faster rate: more than 13 per cent per year in the low income countries, which is almost three times the global average. However, the low income countries still have less than a 5 per cent share of global telephone mainlines whereas they are home to some 55 per cent of the world's population (Figure 3). This disparity is unacceptably high in economic, social and humanitarian terms and the gap is narrowing too slowly.

Figure 1: Is the development gap narrowing?

Trends in teledensity and in share of global telephone main lines, by income group, 1983-92



Note: Low income = 50 countries with 1991 GDP per capita below US$600.
Lower middle income = 46 countries with 1991 GDP per capita between US$601-2'000.
Upper middle income = 47 countries with 1991 GDP per capita between US$2'001-10'000.
High income = 29 countries with 1991 GDP per capita above US$10'000.
Source: ITU World Telecommunication Development Report (forthcoming 1994).

Figure 2: Telephone mainlines, teledensity and growth rates, by income group, 1983-92

Income group	*Telephone main lines 1983 (million)*	*As % of total*	*Tele-density*	*Telephone main lines 1992 (million)*	*As % of total*	*Tele-density*	*CAGR, 1983-92*
Low	7'860	2.1%	0.32	24'699	4.3%	0.84	13.6%
Lower middle	17'766	4.8%	2.81	39'403	6.9%	5.22	9.3%
Upper middle	54'049	14.7%	7.47	107'267	18.8%	12.86	7.9%
High	289'073	78.4%	38.81	398'011	69.9%	49.44	3.6%
World	**368'748**	**100.0%**	**8.10**	**569'381**	**100.0%**	**10.64**	**4.9%**

Note: For definition of income groups, see note to Figure 1.
Source: ITU World Telecommunication Development Report (forthcoming 1994).

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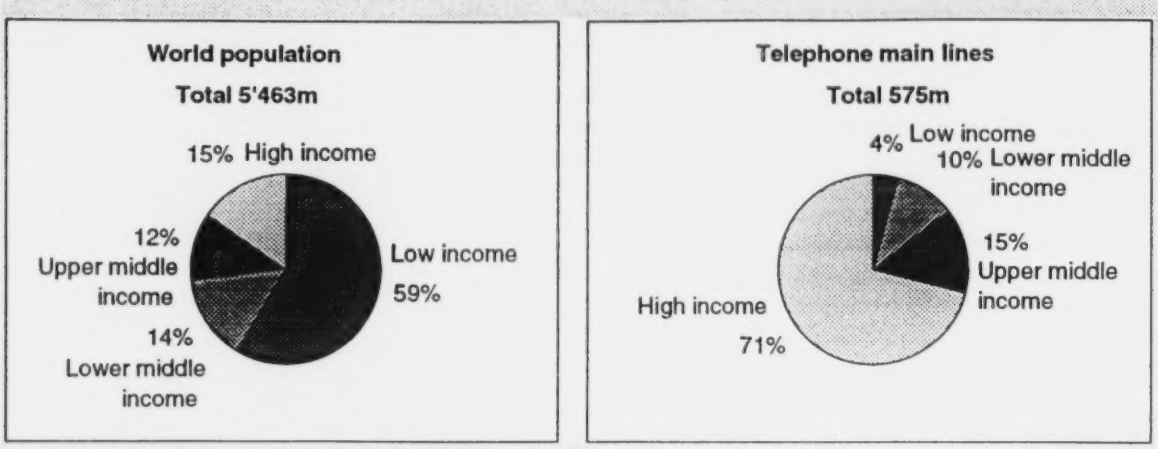
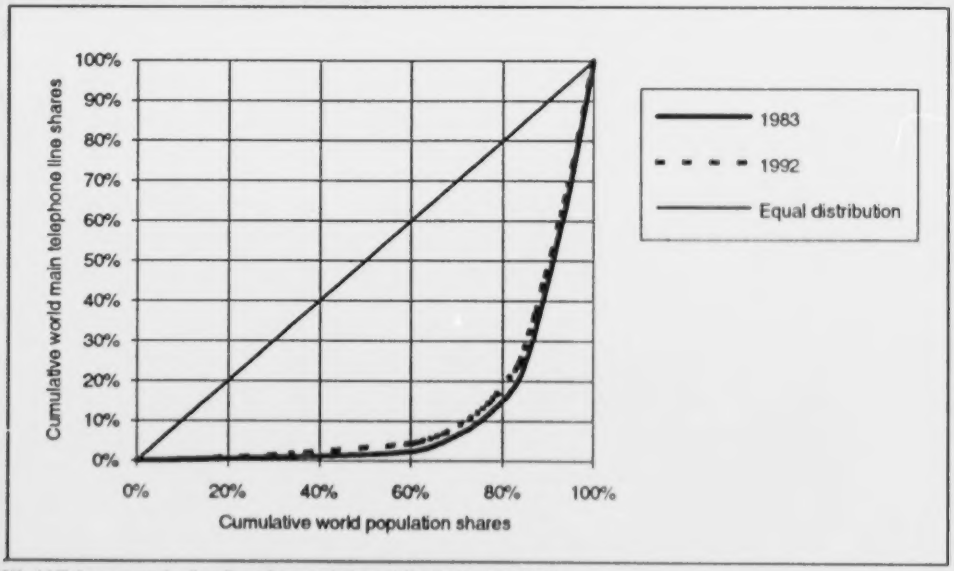
Figure 3: Unequal shares
The distribution of population and telephone main lines worldwide, 1/1/93



Note: For definition of income groups, see note to Figure 1.
Source: ITU (Forthcoming, 1994) "World Telecommunication Development Report".

An alternative way of considering the telecommunication development gap is in terms of the distribution of the world's population compared to the distribution of telephone main lines. In Figure 4 a Lorenz curve is used to show how, over the past decade, there has indeed been a slow convergence between the two indicators. However, this process is occurring at a much slower rate than the authors of the original Maitland Commission report would have hoped.

Figure 4: Slow convergence
Distribution of world population and main telephone lines, 1983 and 1992

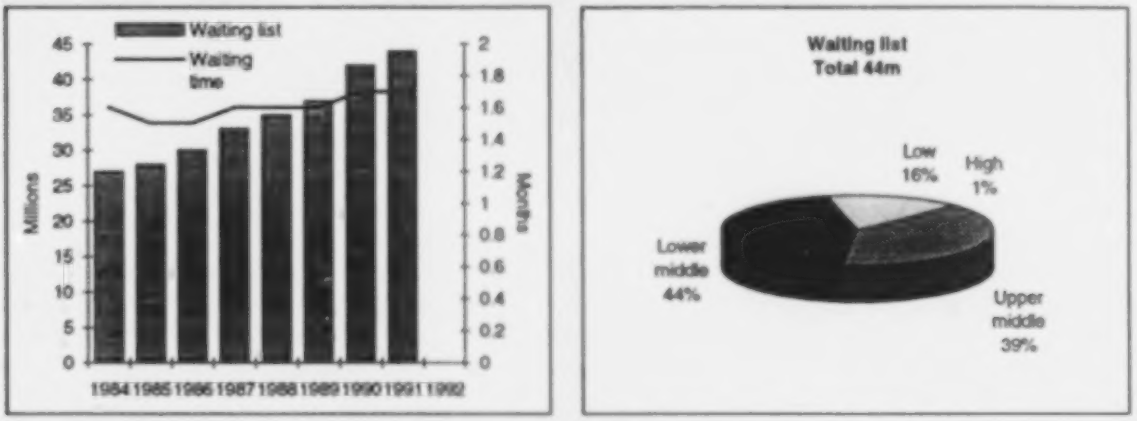


Source: ITU World Telecommunication Development Report (forthcoming 1994).

The growth in telephone lines has not kept pace with new applications for lines. Some 44 million people are on "official" waiting lists for a telephone line; the average wait has been constant over the last decade at just over one and half years. Almost all these "waiters" are in developing countries. The actual or latent demand for telephone lines is probably much higher since many people have not bothered to register because of long waiting times. The number of waiters is higher in lower-and upper-middle income countries

than in low-income ones because the prospect of getting a line soon is probably better in the former countries. Also growing service availability often results in a *larger* waiting list since potential users perceive that they may eventually obtain a connection.

Figure 5: The long wait
World waiting list and waiting time for main line by income group



Note: For the definition of income groups, please see notes to Figure 1.
Source: ITU World Telecommunication Development Report (forthcoming, 1994).

At the end of 1992, almost 50 countries accounting for over half the world's population had a teledensity of less than 1. At their current growth rates, many of these 50 countries are not likely to pass this threshold by the end of the century. As long as half the world's population suffers from low levels of telecommunications development, the vision of a global electronic village remains a dream.

The telecommunications development gap exists not only in *quantitative* terms but also in *qualitative* terms. While it is true that the gap has narrowed in terms of the provision of basic telephone services, there is some evidence to suggest that the gap has widened in other areas, notably in the provision of advanced telecommunication services. Some advanced services -- such as cellular radio, fax terminals, Internet-based electronic mail -- are already widely available in developing countries. But in each case, this represents mainly a consumer investment in terminal equipment rather than a public investment in infrastructure. Where a major public investment is required -- for instance to provide high-capacity leased lines or a data communications network -- then the developing countries are currently lagging far behind the OECD nations. The so-called "Information Super Highways", which could become the growth engine for the post-industrial age and a key element in national competitive advantage, are likely to be constructed first in the OECD nations.

The experience of the Asia-Pacific region

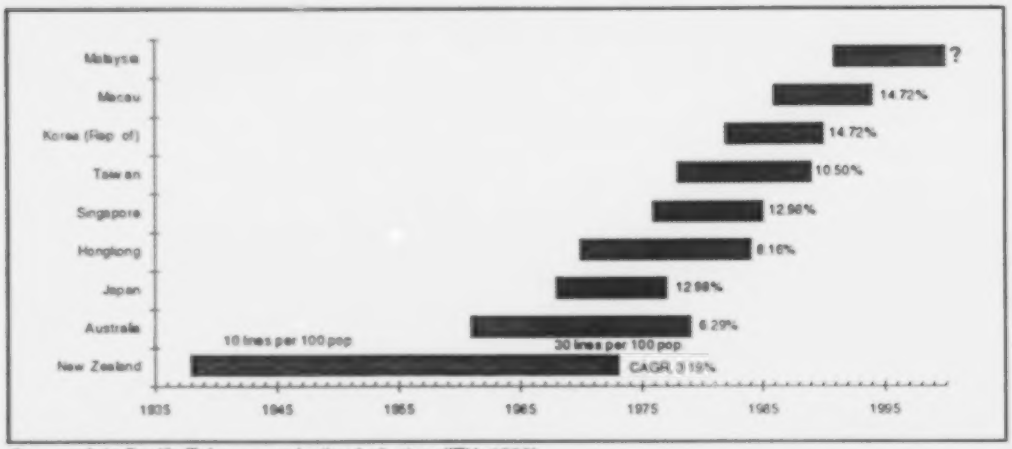
The Asia-Pacific region, which is the main focus of this conference, has probably gone further than any other in narrowing the telecommunications gap and consequently has much to teach us in extending this experience to other developing regions of the world. This region experienced the highest telephone main line growth rates in the world (11.9 per cent a year over the last decade) led by the dynamic economies of East Asia such as the Republic of Korea or Singapore, whose teledensity has now converged with that of OECD countries of the region (Australia, Japan and New Zealand). Other countries such as Indonesia and Thailand have encouraged private participation through Build-Operate-Transfer schemes (BOT) as a way to speed network development.

One of the most encouraging trends in this region is the fact that the transition from a low to high teledensity (from 10 to 30 lines per inhabitant) is apparently becoming easier and quicker over time. The first country in the region to achieve this was New Zealand (1938-73), but it took 35 years to do so. As of the early 1990s, six other economies in the region have also made the transition and others will follow suit shortly. The evidence presented in Figure 6 appears to show that:

- The telecommunications gap between the developed and the developing economies *can* be closed given the right pre-conditions for growth.

- The transition phase between low and high teledensity economies is becoming quicker and easier over time.

Figure 6: The telecommunications transition
Examples from the Asia-Pacific region, 1935-95



Source: Asia-Pacific Telecommunication Indicators (ITU, 1993).

These two trends represent good news for other developing countries further down the growth trajectory. It is interesting to ask why the growth process appears to be speeding up. There would seem to be a number of possible reasons:

- There is a learning curve whereby the "lessons" of a successful investment strategy in one country can be applied in others, given the right economic preconditions and policy framework. There is also strong consumer demand for some new technologies such as mobile phones or fax terminals and this demand has been spurred by advertising and by tourism;.

- Technological change, and in particular the introduction of digital switching, has made rapid development of capacity much easier. The dynamic Asian economies have been able to jump straight from manually-operated to digital exchanges, thus by-passing the semi-automatic stage of network development. In Hongkong and Malaysia, for instance, exchange line digitisation is above 75 per cent.

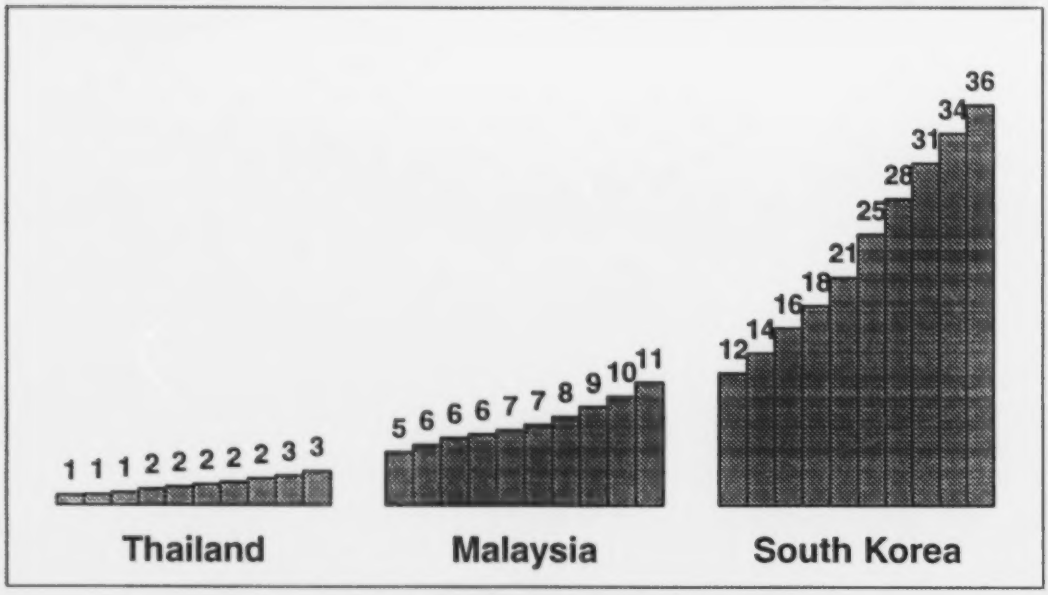
- The dynamic Asian economies already had an industrial structure that depended heavily upon telecommunications-intensive activities such as consumer electronic manufacturing or services whereas the OECD Member countries were still largely agricultural, resource-based economies when they started the transition.

However, the experience of the "four dragons" is not representative of the region as a whole. Many of the poorest countries of the region (including Afghanistan, Cambodia, Laos, Mongolia and the Philippines) are actually growing at a *slower* rate than the regional average, which means that they are being left behind. Furthermore, the "official" waiting list for telephone connection in these countries is more than 7 million, even before taking into account the latent demand that would be released if the waiting list were reduced from the current 3-4 years. This suggests that the development activities of organisations concerned with the economic development of the region should be targeted at the very poorest countries.

One way to illustrate this transition is to take a series of countries at different stages of development and to examine their experience of growth. Figure 7 show how it is possible to make the transition from just one main line per 100 inhabitants to almost 40 within 30 years drawing upon the experience of three Asia-Pacific countries: Thailand, Malaysia and the Republic of Korea.

Figure 7: From 1 to 40 in thirty years

The telecommunications transition exemplified in Thailand, Malaysia and Republic of Korea, 1983-92



Source: Mike Minges, Presentation to Asia-Pacific Telecommunication Summit, November 1993.

How can ITU help?

As the United Nations specialised agency for telecommunications, the ITU has been involved in telecommunications development for over 30 years. In the early 1960s the Technical Co-operation Department (TCD) was established to provide technical assistance and to execute United Nations Development Programme (UNDP) financed telecommunications projects. In the 1980s, as a result of one of the *Missing Link* recommendations, the Centre for Telecommunications Development (CTD) was established with the mandate to improve telecommunication development worldwide.

The 1989 ITU Plenipotentiary Conference created the Development Sector as a separate "sector" of the ITU responsible for telecommunications development. The other sectors are Telecommunication standardisation and Radiocommunications. The Development Sector subsequently absorbed the CTD and the TCD. By giving telecommunications development an equal status with the other sectors, it elevates its importance in the ITU positioning the ITU Development Sector to assume a leading role in the 1990s.

So what are the policy priorities for the coming decade and how can the International Telecommunication Union help?

- **One world, one network**. The great strength of the telecommunications network is the ability to call virtually any subscriber in the world, all 575 million of them, from virtually any telephone. Contrast this with other information industries such as computing, broadcasting or publishing where the multiplicity of different standards, formats and languages in use makes communication very difficult. The ITU has played a pre-eminent role in global standardisation and inter-operability. In a world of competition, deregulation, multi-media networks and rapid technological change, the co-ordination role of the ITU is all the more important. Telecommunication policy-makers should work to ensure that the *right of connection* -- between countries, between networks and between individual users -- continues to be afforded the highest priority in network and service development. This will require working for standards which are truly global.

- **Market competition**. The fastest growing parts of the telecommunications market -- mobile communications, trans-Atlantic and trans-Pacific traffic, data communications, private networks -- are generally those areas in which there is competition. On the other hand the slowest growing parts of the market -- fixed-link subscribers in the local loop, local calls, telex services -- are those areas in which competition has been limited and where monopoly service provision is still the norm. While it *is* possible to achieve growth under monopoly conditions, this is not necessarily the quickest or most efficient route. The adoption of network development strategies based on market competition has been shown to work well for mobile communications and this model might now be applied more widely in the fixed-link network. Regulators will need to gain more experience in the procedures of licensing and interconnection, and in defining regulatory safeguards against anti-competitive behaviour. The ITU provides an appropriate forum for such information exchange and policy discussion, notably through the world and regional Telecommunications Development Conferences, through the world and regional TELECOM exhibitions and fora and through the Regulatory Colloquia, initiated in 1993.

- **Bringing down prices in line with costs**. The threat and the impact of competition in telecommunications has done more to reduce prices in the last five years in those services where competition has been permitted than all of the regulatory price-setting agreements in the previous fifty years. And yet, over the same period, the profits of public telecommunications operators have risen by 19 per cent per year, suggesting there is still more scope for price reductions. Arguably, there are still a few regulatory safe havens where competition is limited or where operators experience little pressure to bring prices down in line with costs. One example is the local loop which telecommunication operators have tended to regard as an unprofitable natural monopoly and have resisted the introduction of competition. A second area which would benefit from the influence of more market competition on prices is international call charges. The system of international accounting rates has served the world well for many years, but it is in need of reform. Growing imbalances and call-back schemes are some of the signs of its failure. Reform that works to reduce prices to consumers, while at the same time assisting those countries which are truly dependent on settlement payments to finance their network development should be pursued. This may involve transitional measures but the urgency of reform should not be ignored. It must be ensured that both regulators and operators are represented in the discussions which take place at the ITU the GATT, the OECD and elsewhere.

- **Private sector involvement**. A handful of developing countries have embraced private sector involvement in their telecommunication infrastructures, generally with positive results. These have ranged from sub-contracting of network installation (e.g., through Build-Operate-Transfer schemes) to the licensing of value-added and cellular radio services to new market entrants and, in some cases, to the privatisation of the PTO. However, many of the developing countries have been slow to allow private sector involvement. Because the telecommunications sector is so profitable, even in the low income countries, there should be little problem in attracting private sector investment providing the regulatory and financial environment is secure and transparent. A majority of the top 40 public telecommunication operators worldwide with revenues greater than US$1.5 billion are now privately owned. But the majority of the next 40 are still state-owned. Over the next decade this situation will change quite considerably. But privatisation is a long-term, on-going process rather than a one-off opportunity for governments to realise some of their assets. Furthermore, the privatisation of a monopoly, in the absence of competition or a strong regulatory framework, is a very unwise route to take. Here again the ITU can help by providing a forum for information exchange and policy discussion, and through its programme of technical and policy co-operation.

- **Resource allocation**. The traditional model of telecommunications industry regulation has been one of managing the demand to fit the available supply. This has been done through waiting lists, through high peak rate call charges and through volume-based usage charges. This model is no longer appropriate now that the industry, at least in the developed countries, is heading towards over-capacity. But the regulator still has an important role in allocating other scarce resources, notably the frequency spectrum and the numbering plan. The demands on each will grow significantly during the next decade as many parallel networks, for mobile, satellite and cable distribution, are developed. Again this is an area where the experience of the ITU in international co-ordination is unparalleled. Many of the problems of scarce resource allocation demand a global solution rather than merely a national or regional solution.

- **Governmental and multi-lateral commitment to investment programmes.** The mismatch between supply and demand which has created the large gap between developed and developing country networks needs to be reduced. In a growing number of countries where private sector funds have been

attracted or where competition has been encouraged, the market will find the best solution to this problem. But many other developing countries require assistance in understanding, planning and implementing a reform process. In some cases, even though the operator may be keen to reform, it is unable to do so because of a lack of commitment from government. The ITU needs to work with other multi-lateral development agencies (who often have more influence at the top levels of government) to raise the level of awareness of the need for reform and investment in the telecommunication sector. The ITU can also encourage the development agencies themselves to become more involved in telecommunication sector reform, especially in those countries that, for reasons of risk or indebtedness, have little immediate possibility of attracting private sector investment or introducing competition.

Across the world as a whole, the telecommunications industry is prosperous, profitable and fast-growing. The supply side of the industry has benefited over the last decade from technological change and from sector restructuring, notably where private sector participation has been introduced. But not all of these benefits have been passed on to the user. Furthermore, where benefits have been passed on, they have been unequally shared between users. The large, commercial, sophisticated user has benefited much more than the residential user. Also, there is a growing mismatch between a relative over-supply of telecommunication services in the advanced industrial nations and an under-supply in the developing countries. The gap has been slowly narrowing in quantitative terms but not necessarily in qualitative terms.

In conclusion, the year 1994 will mark the tenth anniversary of the Maitland Commission report on the telecommunications development gap. It will be a chance to assess the achievements and failures since that report was written. The year 1994 will also mark the tenth anniversary of two other seminal events: the break-up of AT&T in the US, and the privatisation of British Telecom in the UK. These two events have triggered changes in many other countries around the world: in Europe, in Asia, in the Pacific, in Latin America and spreading now to Africa. A new model of telecommunications development has been launched which is based on entrepreneurship, competition and private sector participation. As noted earlier, not all countries are yet ready to adopt this new model. Many preliminary steps need to be taken to establish regulatory frameworks, to separate the functions of the regulator and the operator, and to create an environment which is attractive to investment. Nevertheless, it is important that the developing countries are given every encouragement and opportunity to participate in this new model. For this new model presents a genuine hope that the development gap can now be narrowed in qualitative as well as in quantitative terms.

FORGING NEW LINKS PHILIPPINE STYLE

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1. DYNAMISM AND POTENCY OF THE ASIA-PACIFIC REGION

Ladies and gentlemen, some ten years ago The Missing Link was submitted by the Independent Commission for World Wide Telecommunications Development, better-known as the Maitland Commission.

As we all know, the Maitland Commission was given the task of recommending ways in which the expansion of telecommunications across the world could be stimulated. The resulting report, published in 1983, stated as its overriding objective:

> that by the early part of the next century virtually the whole of mankind should be brought within easy reach of a telephone.

My purpose here today is to review the progress achieved to date towards reaching Sir Donald's objective, and to look at the prospects for the year 2004. In doing so, I intend to focus on telecommunications developments in the Asia-Pacific Region, and in particular, on the experience of my own country, the Philippines.

In his introduction to The Missing Link Sir Donald wrote:

> It cannot be right that in the latter part of the twentieth century a minority of the human race should enjoy the benefits of the new (telecommunications) technology while a majority lives in comparative isolation.

He also said:

> Neither in the name of common humanity nor on grounds of common interest is such a disparity acceptable.

Ladies and gentlemen, the sad fact is, of course, that in many parts of the world, including the Asia-Pacific, this disparity still exists. However, considerable headway is being made and the outlook for the future development of telecommunications in the region bright.

I say this because the Asia-Pacific area is currently the most dynamic regional economy of the world. It is here, in this vibrant environment, that many of the global trends which are likely to dominate the telecommunications sector over the next decade are already much in evidence.

In 1987, I represented the Philippines at a high-level conference in Kuala Lumpur where these trends were identified and discussed. Of course, I am referring to the forces of demonopolization, privatization, liberalization and globalization. The conclusions of Kuala Lumpur in 1987 remain valid today.

In the telecommunications sector, the Asia-Pacific region is enjoying a period of continuing growth. Let me give you a few significant facts that have been compiled by our friends at the International Telecommunications Union.

- More than one half of the world's population lives in the Asia-Pacific Region.
- The Asia-Pacific Region accounts for one quarter of the world economy.
- Overall telephone density in the region is just 4 main lines per 100 population.

It is this combination of an enormous market, considerable wealth and untapped potential that makes the area very attractive to telecommunications investors and suppliers. Indeed, the last decade has seen the number of main lines grow by 70 per cent. In the coming decade, the Asia -Pacific will be the

center of global growth and the hottest market on earth.

And yet there are extreme differences from one country to another in terms of economic potential and the development of telecommunications networks. For example, just three countries in the region (Australia, New Zealand and Japan) account for more than 70 per cent of the wealth and more than 50 per cent of the telephone lines, even though their population is just 5 per cent of the total. By the same token, two countries (China and India) account for just 12 per cent of the wealth and telephone lines while having two-thirds of the region's population.

In terms of telecommunications policy, the gamut runs from state-run monopolies to virtually unregulated competition, reflecting the contrasting ideologies of the region. However, policy makers and regulators everywhere are being faced with a host of unfamiliar issues which are forcing them to give way to new ideas and approaches.

But one should not be tempted to conclude that the region has little in common. Economic dynamism inevitably tends to spill over national borders. And as individual nations in the region begin to take off economically, intra-regional trade grows and engenders a closer sense of regional identity.

The growing importance of trading links within the region is confirmed by the volume of international traffic. For instance, calls within the region account for about 55 per cent of all traffic originating in the Asia-Pacific. This is greater than the North American Free Trade Area and is the same as the European Community. Satellites and undersea cables link the countries of the Asia-Pacific with their regional neighbors and the world beyond.

Everywhere in the Asia-Pacific dramatic expansion in telecommunications has accompanied the dramatic saga of economic growth. It is little wonder then that we look forward to the dawning of the Pacific century when the focus of global economic activity will shift towards this region of immense promise.

2. STATE OF TELECOMMUNICATIONS IN THE PHILIPPINES

In my own country of the Philippines, we are also on the verge of exciting changes. Like many Asian countries, we have a history of uneven telecommunications development and low penetration. Unlike many of our neighbors, however, our telecommunications system has always been characterized by a high degree of private ownership. Perhaps other countries who are in the midst of corporatizing or privatizing their telecommunications entities will find our experience instructive.

When former President Ferdinand Marcos fled the Philippines in February 1986, he left behind a country on the edge of a precipice. The ultimate challenge to his successor was to prevent the country from plunging into the abyss. The catastrophic consequences of unbridled use of power by the old regime were abundantly in evidence. The economy was in shambles. The country was in near penury with a crippling debt load.

This deplorable state of affairs was reflected in the condition of the Philippine telecommunications system. The telecommunications sector was highly segmented and fragmented by service, technology and geography. This imbalance resulted in an overall lack or absence of adequate and reliable telecommunications services in most population centers. In fact, telephone density stood at around one line per 100 persons for the country as a whole, or only about half the Asian average.

Today, under the leadership of President Fidel Ramos, the situation is beginning to stabilize. The President recently articulated his vision for development when he launched Philippines 2000 and the Philippines is becoming the target of renewed investor confidence. However, at the moment, the telecommunications system has only marginally improved from the Marcos era.

Teledensity now stands at just 1.4 lines per 100 persons. The major problems of poor access to telephone service, large unmet demand, unbalanced urban-rural distribution and poor quality of service still remain. These problems result primarily from inadequate telecommunications infrastructure. This inadequacy can be attributed to insufficient investment, lack of rural service obligations of existing operators, and insufficient interconnection of telecommunications carriers.

However, I did not come here to simply recite a litany of woes. On the contrary, the Philippines now stands on the threshold of an era of telecommunications growth unparalleled in its history. Foreign investors are striving to enter our telecommunications market. Telecom stocks have

carried the Philippine stock market to record highs. Previously unthinkable strategic alliances between erstwhile competitors are being announced as a matter of course. How did this come about? What miracles have transpired to bring about this sudden change?

3. RECENT TELECOMMUNICATIONS POLICY AND REGULATORY INITIATIVES

There were no miracles and these changes did not occur overnight. Rather, they have been the culmination of a series of policy and regulatory initiatives that have taken place over a period of several years. Some of these initiatives may appear unorthodox and even unworkable. However, they reflect the realities of working within the Philippine culture and environment; I would not presume to suggest that in all cases they are readily transferable to other countries.

The first step came in 1987, shortly after the country's leadership changed hands for the first time in more than two decades. At that time, the new government of President Cory Aquino issued the Medium-Term Philippine Development Plan which recognized the vital role of the telecommunications sector in the economic development process.

Also in 1987, the Department of Transportation and Communications issued Department Circular No. 87-188. This was a landmark document which contained policy statements intended to rationalize and guide the orderly and competitive development of Philippine telecommunications through the 1990s. As a direct result of that circular, our country's regulator, the National Telecommunications Commission, promulgated regulations for the connection of customer-provided equipment to the telecommunications network. This was a significant step towards opening up the sector to competitive forces.

Building on the foundation of Circular 87-188, the DOTC started work on an updated National Telecommunications Development Plan covering the period 1991-2010. This work was completed in October 1990 and further updated in July 1993.

Following the publication of the 1990 NTDP, significant progress was made on several fronts. Let me enumerate a few:

(1) Technical standards governing the sector were issued by the NTC in 1990:

(2) Implementation guidelines for the rationalization of local exchange service were developed in 1991;

(3) In 1992, a policy and implementing guidelines for the orderly development and operation of cellular mobile telephone service were issued; and,

(4) A policy and guidelines to govern domestic satellite communications were released in 1993.

Also back in 1992, the new Philippine Medium-Term Development Plan 1993-1998 was approved by Cabinet. The Plan provides the guideposts for attaining President Ramos's vision of making the Philippines a newly-industrialized country by the year 2000. To fulfil this vision, the telecommunications sector was directed to pursue more vigorous development through intensified private sector participation.

The high level of attention given to the telecommunications sector reflects the government's recognition that an inadequate telecommunications infrastructure impedes economic growth, and that the Philippines has fallen behind nearly all other Southern Asian countries in terms of telecommunications development. Thus the government, with the major participation of the private sector, aims to expand basic telecommunications service throughout the country as well as improve service in the areas already being served.

As tangible evidence of the President's commitment to these goals, I would draw to your attention two executive orders issued by his office in 1993. An important feature of these executive orders is the strong enforcement powers granted to the NTC. This has provided a clear signal to the industry that the government is serious about compliance.

The first, Executive Order 59, provides for the mandatory interconnection of public telecommunications carriers. This order has effectively broken the stranglehold exercised by the dominant Philippine carrier and has reassured new players that their traffic will have equal access to the

public switched network.

Executive Order 109, for its part, takes a somewhat unconventional approach to improving local exchange service. EO 109 requires the holders of international gateway franchises and cellular mobile franchises to install at least 300,000 and 400,000 local exchange lines respectively in underserved areas in return for the privilege of holding their franchises.

To implement this order, the NTC has embarked on an innovative plan that divides the country into ten service areas. Potentially lucrative service areas will be coupled with less profitable ones where the gateway and cellular providers will be assigned to fulfil their local exchange commitments.

Whether this ambitious plan can be accomplished in an orderly and rational way remains to be seen. In addition, the ability of the gateway and cellular operators to survive while raising the necessary financing for the local exchange construction will be severely tested. But ultimately, we should see a decided increase in local exchange lines and that is what is important.

I have spoken of the Philippine government's role principally as a policy maker and regulator. However, we have also been involved in certain infrastructure projects, financed with assistance from Japan, France, Italy, Canada, Germany and the United States.

In this regard, I should mention the National Telephone Program and the Regional Telecommunications Development Program which provide telephone lines and an interconnecting backbone network primarily in very remote and unserved areas. As well, the Municipal Telephone Program, jointly implemented by the government and the private sector, is committed to installing public calling offices in all municipalities currently without telephone service.

However, I should emphasize that the government is firmly committed to privatizing its telecommunications assets and operations and is in the process of doing so. And I should also point out that government telecom facilities constitute less than five per cent of the Philippine total, the rest being in private sector hands.

4. OUTLOOK FOR THE FUTURE

So far I have been speaking about the past and the present. What about the future? In some ways the Philippines is well-positioned to meet the future; in other ways we still have daunting challenges to meet.

First of all, there is a new business excitement in the country which can be attributed to the stabilizing influence of President Ramos. The Philippines, often called The Sick Man of Asia, is getting up and feeling better. The new excitement has translated to the telecom sector due to the series of government policies opening up the market.

Now, we have a plethora of applications and proposals to provide national backbones, local exchange service, international gateways, and cellular service. These initiatives are backed by serious "big name" overseas players - Bell South, Telstra, and Singapore Telecom, among others. If all their plans were to bear fruit, we would see the installation of some four million local exchange lines by the end of the decade.

Spurred by the specter of impending competition, our dominant carrier, the Philippine Long Distance Telephone Company or PLDT, has reacted in a startling reversal of form. Just a few months ago the company seemed heading for disaster. It was reeling from the government campaign to break its dominance. Rival companies were snapping at its heels, cheered on by consumers frustrated by years of poor service.

However, PLDT has now begun to seriously address its telephone backlog problem and is competing aggressively with rivals in new telecommunications niches. Under its massive, others say optimistic, Zero Backlog Program, the company intends to install close to one million additional lines of its own by 1996. And that is just to meet the current "expressed" demand. Nobody knows how many potential subscribers have never applied for a telephone due to the long waiting time for installation.

Already the country's most profitable company, PLDT has now become the darling of the stock market investors.

All this looks very encouraging. However, as I mentioned earlier we still have daunting challenges to meet. What are they?

There are many popular myths in this world. Let me give you some examples. Of course, we are all familiar with that all-time favorite: "The check is in the mail". Others of more recent vintage include: "Automation will eliminate jobs" and "Electronic Data Interchange will eliminate paper". But there is also another myth that some people cling to and that is: "Competition means deregulation".

This is the basis of the challenge that faces the Philippines. In telecommunications, competition does **not** necessarily mean deregulation, it usually means reregulation. The challenge is not to regulate less, it is to regulate smarter. We have to ensure that competition is introduced in an orderly and rational fashion. Wasteful duplication must be avoided. We must resist the temptation to fast track everything. New entrants must be protected from anti-competitive behavior by the dominant players. Carrier disputes should be resolved efficiently. In short, the public interest must be maintained.

In the Philippines, as elsewhere, the global changes occurring in the telecommunications industry are seriously affecting government institutions. Pressures resulting from the introduction of new technologies and the movement towards competition are forcing the restructuring of government institutions.

There is a need for policy and regulatory frameworks that operate independently from the service providers. Hence, the strengthening of existing government institutions, as well as the introduction of new ones, has become an urgent imperative. This is driven by the need to develop policy analysis and regulatory skills never before required in countries such as ours.

We in the Philippines have not neglected this aspect of telecommunications development. Through a long term project with a Canadian partner, the DOTC and the NTC have been engaged in a process of institutional strengthening.

Past models of institutional strengthening have usually involved a one-way transfer of technology or knowledge. But the traditional "technology transfer" or "training" programs are no longer sufficient. They must now be more sensitive to political, social, legal and even cultural aspects in addition to the usual technical requirements.

More importantly, institutional strengthening programs require a sustained partnership between the sponsor and the recipient organizations. These long-term and trusting relationships are a critical success factor in the project, allowing key individuals to build a rapport. Thus, we are developing the necessary skills to deal with ever-changing telecommunications policy and regulatory issues on a sustainable basis.

Ladies and gentlemen, I have outlined for you the exciting promise of telecommunications in the Asia-Pacific. I have discussed the hopes, the opportunities and the challenges of telecommunications development as they relate to the Philippines.

Let me turn now for a moment to a broader question that is currently being debated in the Philippines. And that question is: Are democracy and development compatible?

There are critics of democracy in my country who advocate a return to authoritarian government as the solution to our economic problems. After seven years of restored democracy in the Philippines they say, the economy does not seem to have improved much.

They point to the East Asian tigers as compelling models. The East Asian tigers had authoritarian government in the period leading up to their success. They were able to leapfrog the usual, long stages to development to get to where they are now. They appear to have made it through the massive intervention of authoritarian government in the economy. Government, not just as catalyst but as leader in rapid economic development.

The type of interventionist policies that worked for the East Asian tigers over the last thirty years of course would not work in today's economic climate. They would only invite international retaliation.

And I would remind the advocates of authoritarianism of the words of Winston Churchill who once said that democracy is the worst form of government - except for all the others.

The Philippines has already tried authoritarianism and we are still paying the price. Perhaps seven years of democracy is too short a time to recover from 14 years of systematic plunder by a dictatorship. However, with the exception of the East Asian tigers, which have become democracies, the richest countries in the world have been democratic.

Indeed, the Philippines enjoyed its greatest growth and its greatest prosperity in its years of democracy

following World War II.

In a recent speech, Mr. Jaime Zobel de Ayala, one of the leading businessmen in the Philippines declared:

> Democracy is not a means to development, it is the purpose of development...There is nothing in the record to show that democracy is incompatible with effective government.

And this is my message to you today. The Philippines, under a democratic government, is implementing honest and intelligent economic policies. Our decisions may not always be right, but they will not be tarnished by venal self-interest.

Under the democratic leadership of President Ramos, political stability has been established. Our electrical power problems are close to being solved. The world is starting to realize that the Philippines is a good place to invest again. Just look at what's happening in the telecom sector. Or better yet, come to the Philippines and see for yourself. Thank you.

TELECOMMUNICATIONS LIBERALIZATION - THE HONG KONG MODEL

ALEX ARENA
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ABSTRACT

Hong Kong, being a major financial business centre in Asia, naturally places a high value on having a modern telecommunications infrastructure. To that end, telecommunications policies have been overhauled and a new policy framework is being implemented. This new framework builds on Hong Kong's pre-existing pro-competitive policies such as those in mobile telecommunications.

Central elements of the new policy framework are the introduction of competition in domestic fixed telecommunications network services, the establishment of an enhanced regulatory structure and the implementation of a set of competitive safeguards. This paper provides an outline of the Hong Kong approach.

BACKGROUND

To make some sense out of this discussion I will need to set out some background to Hong Kong. In my opinion, Hong Kong has embarked on a rather special experiment. An experiment which over the next few years will confirm Hong Kong as a laboratory for testing a variety of ambitious new telecommunications services and the many futuristic, interactive, multi-media services receiving such intense commentary in the trade press. But why Hong Kong? Let me explain.

Hong Kong is a territory of the United Kingdom, and yes it will be united with China on 1 July 1997 in accordance with the Joint Declaration and the Basic Law which specifies "One Country: Two Systems". The territory comprises about 1,000 square kilometres and for the most part is around a series of rugged hilly lands. The population of Hong Kong is about 6 million people but as 90% of Hong Kong is national parks the remaining 10% (or 100 sq km) is intensively populated. Average population density is around 60,000 people per square kilometre but some localities well exceed 100,000 per square kilometre. The concept of the local loop takes on some different characteristics in this environment - for example much of the local loop is vertical rather than horizontal.

So while the physics is different so is the wiring. Telephone density is very high with about 3 million exchange lines - ie line density is around 50% of the population. The telephone network is 100% digital. Furthermore alternative building wiring is available in the form of co-axial cabling for Community Antenna Broadcast Distribution (CABD) for "free to air" TV reception and Satellite Master Antenna Television (SMATV) for Satellite TV reception. In many cases additional forms of cabling such as closed circuit TV or alarm or security monitoring cabling may be available. In addition a cable TV operation has commenced. This will initially reach homes via microwave multi-plexed onto the SMATV/CABD cabling and progressively, to be completed circa 1997, will be reticulated territory-wide by optic fibre.

In terms of the Territory's economy, during the decade 1982-92, average annual real GDP growth was 6.5%. The corresponding rate for OECD countries was 3.0%. Over the next decade Hong Kong's average annual real GDP growth is forecast to exceed 5%.

In 1992, per capita GDP was over US$16,000 per year. This is amongst the highest in Asia; lower than Japan but about the same as Singapore. In European Community terms, this is higher than Spain, Ireland, Greece and Portugal. During 1993 per capital GDP is expected to exceed that of the UK and Australia and next year should exceed Canada's. Hong Kong is the world's tenth largest trading economy although it ranks only 89th in terms of population.

The economy has experienced significant structural adjustment over the past decade and is now more than 70% services-based. Hong Kong's container port has the highest throughput in the world. In 1992 Kai Tak was the third and fourth busiest airport in the world

in terms of international cargo and passengers respectively. Hong Kong is one of the world's leading financial centres in terms of the volume of external banking transactions. Sixth largest in terms of foreign exchange transactions.

Of course much of this growth is stimulated by the emergence of China and Hong Kong's special relationship with Southern China, particularly through the Pearl River delta. But that is only part of it. The OECD has recently forecast that Asia will account for about one half of world production by the year 2040 - up from the 24% share in 1990. A map of the Asia-Pacific clearly shows Hong Kong there in the middle - a centre of excellence and superb capabilities with the telecommunications prowess to support telecommunications-hungry service industries.

Putting it together you can see a rather special picture in Hong Kong;

- a dense population
- quality telecommunications
- cabling alternatives
- high income levels
- a propensity to use telecommunications

These form the pre-conditions which allow Hong Kong to experiment with its approaches to telecommunications policy.

HONG KONG'S TELECOMMUNICATIONS INDUSTRY

The current telecommunications industry is characterised by well-established, and extensive, competition in mobile services but monopolies in fixed services.

Mobile Services

In Hong Kong there is already ample evidence of how competition can work to produce greater benefits for consumers -

- in mobile telephone, there are four competing cellular operators and, with more than 285,000 customers, one of the highest rates of mobile 'phone 'take up' in the world;

- in radio paging, there are 34 licensees and the highest per capita subscription rate in the world - with about 1 million pagers in use, one in six Hong Kong people are paging customers;

- in the supply of CT2 'telepoint' services (a form of personal communications service, PCS), three operators have built up a customer base of about 120,000 users in less than two years.

Given these benefits, a key question for Hong Kong has been how much further should competition be introduced into the telecommunications market.

Scope for Further Competition

Until 1995, the Hong Kong Telephone Company (HKTC) holds an exclusive franchise to provide local voice telephony by wire - or, in other words, HKTC currently holds a monopoly on the domestic telephone service. Hong Kong Telecom International (HKTI) holds a similar monopoly over international services until 2006.

The Hong Kong Government has stated clearly its intention to honour the terms of existing franchises and licences. To do otherwise would have had the potential to send the wrong signal to the outside world about the way business is conducted in Hong Kong and risked jeopardising investor confidence. Nevertheless Government policy has made it equally clear that there is no intention of allowing any expansion in the scope of existing exclusive rights. On the contrary a critical look continues to be taken on what room remains for further liberalisation without infringing them. Of course, significant opportunities have existed for some time for competition in apparatus supply, value added services and private networks (both domestic and international). The market for single line customer equipment, for example, standard telephones, can be said to be truly deregulated as type approval requirements no longer exist for such equipment.

THE POLICY REVIEW PROCESS

The Reasons for Review

A number of factors prompted review of policy. First, there is the worldwide trend towards greater liberalisation in the provision of telecommunications services. This trend is both fuelled by and fuelling technological change. New services and new ways of providing services have discredited the old orthodoxy

of telecommunications as a natural monopoly.

The second factor is the expiry in 1995 of HKTC's domestic monopoly. Amongst other things the company needs to plan its business beyond 1995. To do that it needs to know what the local telecommunications operating environment will be. Similarly, potential local network competitors would need to know what services they would be allowed to provide: local data and facsimile services only, or voice telephone services as well. And, if there were to be competition, what would the ground rules be with regard, for example, to network interconnection? Investment lead times are such that these questions needed to be answered as soon as possible.

A third factor which prompted policy review was the collapse of the Hong Kong Cable Communication consortium, which in 1989 was selected to provide a combined territory-wide cable television and second telecommunications network. The intention was to license that network to provide non-franchised services (mainly local data and facsimile services) in competition with the existing local network operated by the Hong Kong Telephone Company. Had that project proceeded as intended, it would have provided the means for extending the scope of local network competition to include local voice telephony after 1995. But it did not, and Government was obliged to rethink its strategy.

Review Principles

Policy review was guided by a number of key principles:

- that telecommunications policies should ensure that the widest possible range of services are available to meet customer demands at reasonable cost;

- a determination to maintain and enhance Hong Kong's competitive edge as a business and financial centre; and

- further liberalisation bounded by a commitment to honour existing franchises and licenses.

Following from the last mentioned principle, it is to be expected that an integral part of the review process proved to be a series of discussions with Hong Kong Telephone Company and Hong Kong Telecom International, on the possible ground rules for the introduction of greater liberalization both at the domestic and international level. Those discussions did yield a broad measure of agreement on a number of important issues.

POLICY REVIEW OUTCOMES

Domestic Network Competition

The Hong Kong Government has decided to replace the Hong Kong Telephone Company's exclusive franchise over the domestic telephone service with a non-exclusive licence when the franchise expires in 1995. This will pave the way for competing networks to provide local fixed-link voice telephone services, just as Hong Kong already has competition in mobile telephone services. The Hong Kong Telephone Company's non-exclusive licence post-1995 would include a universal service obligation: that is the company would be obliged, as at present, to provide telephone service to anyone who requires it, regardless of where they live. In the shore term, before expiry of the franchise, the Government will license competitive networks wishing to provide non-franchised services such as data and facsimile, and local voice telephony thereafter.

The reference to competing networks plural should be noted. This is deliberate and reflects the fact that a decision had to be taken on how the Government should go about licensing new local networks and whether Government, rather than the market, should impose a limit on the number that should be licensed. The main choice here proved to be between a tender type licensing process, in which Government selects one or more bidders to provide a competing network or networks or an open licensing regime - such as has been adopted in the U.K. Under the latter approach, that is a market-driven approach, the Government would consider new network applications on their merits, as and when they are received. However, this would not mean a free-for-all. For example, applications might be ruled out if they would cause unacceptable public disruption because of additional road opening. This would encourage applicants to make use of existing ducts and tunnels as much as possible and/or make innovative use of radio technology.

The Hong Kong Government decided to adopt the market-driven approach and in late September 1992, invited proposals for competing networks. In response seven parties submitted proposals by the

closing date of 1 February 1993. Generally, the proposals received were substantial and involved some of the major global telecommunications players. Following a detailed assessment of the proposals and an analysis of Hong Kong's likely future market size, I announced on 30 November my intention to award three new licenses to compete with the Hong Kong Telephone Company. The successful applicants (in alphabetic order) are Hutchinson Communications Ltd, New T and T Hong Kong Ltd and New World Telephone Ltd. Licences are to be issued as soon as possible once the terms of the licenses are finalized and following consultation with the Chinese Government since the licence will span 1997.

Lest it be misunderstood, non-renewal of the existing exclusive franchise should not be interpreted as indicating that the Government is unhappy with the service provided by the Hong Kong Telephone Company. The Hong Kong community values the high quality of service it provides. But the Government sees no reason to shield HKTC from competition after 1995, and thereby forego the benefits of improved innovation, price discipline and customer responsiveness that competition would bring.

What does Domestic Network Competition Mean?

Essentially domestic network competition in Hong Kong means little less than wide-scale local loop competition. Clearly the scope of HKTI's international licence will preclude the new entrants from providing their own international services to their customers but, in effect, for simple switched voice traffic, they will be required to obtain their international connection from HKTI for such traffic. Furthermore, Hong Kong does not have toll/long-distance traffic internally as all calls within Hong Kong are "local". Yet it is this local market which is to be competitive first rather than the international/long distance market first as is the established pattern in most countries which have introduced competition in telecommunications. Despite these circumstances, competitive local fixed licences have been the subject of very keen interest and, based on Hong Kong's special circumstances, there is good reason to believe this competition will be viable and survive.

THE HONG KONG REGULATORY PRESCRIPTION

The Hong Kong Government is well aware of the fact that introducing competition in telecommunications, in particular in fixed networks, is not a simple task - a view confirmed by the experience of those countries which have taken this step. The monopoly operator has the potential to abuse its market power to deter new entry by even the best resources competitors. The clear message from overseas experience is that a strong, specialist and well-resourced regulator is a necessary counter-balance to the dominant player's market power, thereby allowing competition to take root.

For Hong Kong the issue has been to formulate a regulatory prescription which is in keeping with its successful laissez-faire economic philosophy. Thus regulatory models in use elsewhere which rely on placing excessive regulatory burdens on all players, particularly the incumbent operator, have been rejected. Rather Hong Kong has adopted a 'light-handed' regulatory model, under which regulatory requirements are tailored according to the nature and extent of the operator's market position. This does not mean that the regulator is powerless: the Telecommunications Authority has been equipped with a range of powers which would enable him to act should market power be abused or the public interest warrant his intervention (for example should operators collude to the detriment of competition or consumer interest).

As necessary first step has been to sharpen the regulatory focus. Traditionally, regulation of telecommunications in Hong Kong has been under the jurisdiction of the Postmaster General. In recognition of the increasing importance, scope and complexity of the work of telecommunications regulation, particularly in a multi-carrier environment, the Government has established a separate telecommunications regulatory body: the Office of the Telecommunications Authority (OFTA), effective from 1 July 1993.

This move parallels that in a number of other liberalized telecommunications regimes and is a step designed to facilitate the achievement of the Government's policy objectives. The creation of OFTA is, in itself, a pro-competitive measure. The Director-General of Telecommunications as both the head of OFTA and as appointed under Hong Kong law, the Telecommunications Authority, has been given more resources and statutory powers to perform his functions.

The Telecommunications Authority is charged with a broad sweep of responsibilities across both telecommunications and radiocommunications. These responsibilities include;

- technical regulation
  (eg - standards
  - compliance procedures
  - radio interference investigation
  - co-ordinating satellite filings etc)

- economic regulation
  (eg - issuing licenses
  - administering license conditions
  - resolving carrier disputes, such as interconnection
  - price control
  - maintaining fair competition)

- radio frequency spectrum management

- formulating and administering Hong Kong's telephone numbering plan

- protecting consumer interest eg investigating complaints, acting against misleading advertising by carriers.

It should be noted that the Telecommunications Authority serves as the technical regulator for broadcasting services in Hong Kong and is appointed as a Member of the Broadcasting Authority.

To facilitate fixed network competition the Telecommunications Authority is now implementing a competitive safeguards regime which includes:

Interconnection. For there to be effective competition, it will be necessary for a new competing domestic network to interconnect with the existing fixed-link telecommunications infrastructure of the Hong Kong Telephone Company and Hong Kong Telecom International. As part of the discussions with the companies, referred earlier, the Government has reached a common view on the board principles that should apply to network interconnection. First, any new domestic fixed-link network should, in the first instance, seek to negotiate its terms of interconnection level directly with the Hong Kong Telephone Company. If the parties cannot reach agreement, the Telecommunications Authority has the power to arbitrate between them and determine the terms and conditions (both technical and commercial) that will apply.

As far as interconnection with international facilities of Hong Kong Telecom International is concerned, the Government has agreed in principle with the company that the current system whereby the Hong Kong Telephone Company receives a share of international telephone service revenue should be converted into an access charge arrangement. Under the new system the Hong Kong Telephone Company, and any new domestic public fixed-link network, would receive payment on a per minute basis for carrying traffic to and from its customers and the international facilities of Hong Kong Telecom International. The charges payable would take account of the universal service obligation undertaken by the Hong Kong Telephone Company. So there would be no immediate, at least, phasing out of the present cost subsidy arrangement. These arrangements will also apply to cellular mobile telephone networks, which effective from 1 August 1993, are able to interconnect directly with the international gateway, instead of via the Hong Kong Telephone Company network.

The principles sketched out above on interconnection only represent a broad framework within which domestic network competition could take place. Legislative amendments have been made to implement this framework and it will be refined, as necessary, in consultation with the competing fixed network licensees.

Numbering. Access to a fair allocation of numbers is a vital operational requirement for any current or prospective provider of public telecommunications services. In recognition of the fact that numbering for telecommunications purposes is a public resource, the regulatory authorities in other jurisdictions, for example in the U.K. and Australia, have taken up overall control of their national numbering plans. Hong Kong is, effectively, doing this as well. The Telecommunications Authority is charged with ensuring a fair and reasonable allocation of telephone numbers among operators. OFTA expects to finalise Hong Kong's new numbering plan by the end of 1993. Number portability (for both geographic and operatory portability) and a territory wide personal numbering scheme are two issues the Telecommunications Authority intends to implement in the new numbering plan.

Fair Trading. Hong Kong does not have a common framework of anti-trust/fair trading law which applies

to the generality of trade and commerce. In the telecommunications industry the Telecommunications Authroity is required to manage such fair-trading aspects as are relevant to this industry. The Telecommunications Authroity discharges these responsibilities through a set of licence conditions inculded in competitve licences. While the licence conditions do not attempt to replicate a complete anti-trust regime as exists in a number of countries, they do constitute a substantial set of controls which the Telecommunications Authority can use to curtail such anti-competitive practices as predatory pricing, collusion, tied sales, exclusive dealing and excessive service bundling.

Other competitive Safeguards. The new policy regime also addresses a number of potential concerns by providing for:

- a requirement for HKTC (as the dominant carrier) to tariff its services and charge only in accordance with its published tariffs (that is a control over price discrimination);

- a financial monitoring regime to enable the Telecommunications Authority to detect such matters as cross-subsidisation and transfer payments among a carrier's various lines of business and its affiliates; and

- restrictions on the control over and ownership in licensees. Hong Kong has no foreign ownership restrictions in telecommunications but there are reserve powers to control undesireable cross-ownership among licences should it prove necessary.

Consumer Interests

Local tariffs. When the Hong Kong Telephone Company's scheme of control expired on 31 March 1991, HKTC indicated to Government that it did not wish to enter into a new agreement along the previous lines. The Government too had reached a view that the scheme of control, which enabled HKTC to earn up to a maximum of 16% return on shareholders' funds was no longer the most appropriates means of regulation for the Hong Kong Telephone Company. The Government therefore agreed in principle that Hong Kong should move instead to a system of incentive regulation known as price-capping. This approach, which has been adopted in Australia, the U.K. and the U.S., ensures that the weighted average annual increase in the charges for telephone services is not allowed to exceed the prevailing annual inflation rate minus an "X" percentage.

Following discussion with HKTC it was agreed in principle that the level of "X" should be fixed at 4% for the remaining three years of HKTC's existing franchise, with a further review in 1994/95 to determine the price control arrangements thereafter. Over the last ten years under the previous scheme of control, the Company's telephone charges have increased at an average annual rate of 2.5% less than the rate of inflation as measured by the consumer price index (CPI). So an "X" of 4% will result in telephone charges resing by some 1.5% p.a. less than the historic trend. The Government believes this is a good deal for consumers, ensuring that, in real terms, local telephone charges will decrease significantly while providing a reasonable degree of incentive for the company to continue to invest and improve its efficiency over the life of the price-cap. To further protect consumer interests, sub-caps have been put in place such that rises in connection charges also do not exceed CPI - 4% and that rental fee increases for a residential line do not exceed CPI - 3%. Regard will also be given to minimum quality of service standards to ensure that service quality does not deteriorate under these new price-cap arrangements.

International Tariffs. It has been the Government's view for some time that significant reductions are warranted in international tariffs in order that more of the benefit of the cost reductions that have been occurring in international telecommunications should be passed on to consumers. After intensive negotiation with HKTI the Government secured agreement for IDD charges to be reduced by about 12% (in nominal terms) over three years: commencing with an 8% reduction on 1 August 1993; and followed by further reductions of 2% in each of the next two years. Taken together with the local tariff controls, these measures represent a major step forward, in the interests of the consumer.

INTERNATIONAL SERVICES

Further liberalisation in international services is of course constrained by the terms of Hong Kong Telecom International's license which does not expire until 2006. There is, however, in the Government's view still room for further liberalisation in international services without infringing the exclusive rights granted under that license. In particular, the

Government believes that the current restrictions which limit the use of international private leased circuits in the provision of competitive services should be relaxed further. Some more relaxation has taken place recently with confirmation that international managed data network services may be supplied competitively and the clarification that Hong Kong does not require bilateral agreements to be in place before it authorises these types of competitive international services. In addition, companies and organisations are to be authorised to provide their own international private circuits by, for example, directly leasing satellite capacity. These matters are the subject of continued policy and regulatory analysis.

CONCLUSION

Hong Kong forms an important element in the Region's telecommunications infrastructure. It is the vital hub for much of the Region's financial and business communications. Hong Kong is committed to remaining at the forefront of global telecommunications developments and, as a results of a fundamental review of policy, is expanding its pro-competitive approach to meet that objective. Good progress has been made in establishing the new regulatory arrangements. These will be developed further to facilitate the introduction of local fixed network competition upon the expiry of Hong Kong Telephone's exclusive franchise in 1995.

Hong Kong's experience with introducing fixed network competition will represent a substantial experiment in local loop competition. A rather special blend of factors as diverse as topology, high income levels, technological sophistication, a strong telecommunications culture which supports Hong Kong's open, trading economy and the right conditions for competition may demonstrate how local loop competition can work. Furthermore these conditions may lead to an acceleration of the convergence that is evident in telecommunications, cable and broadcasting industries, such that Hong Kong is propelled into the forefront of the broad-band, interactive "multi-media" world which is now the focus of much discussion and conjecture.

INFORMATION TECHNOLOGIES - PRESENT AND FUTURE

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AT&T has been working since its inception to bring technology to the world for telecommunications applications. In 1925, AT&T created Bell Laboratories which is widely recognized as a model industrial research and development organization. Bell Labs has focused on technology for telecommunications infrastructures for 68 years, ranging from fundamental building blocks to sophisticated applications.

To bring the world the expanding services that customers and users demand, we have had to deliver a multitude of technologies to overcome four barriers: space, time, cost, and language. (See Figure 1). We can think of space as having been conquered because we can connect one location to another virtually anywhere in the world. By storing messages whether they be voice, data, or image so they can be sent at the convenience of the sender, and received at the convenience of the receiver, we have overcome the barrier of time. Cost is always an issue. Desirable solutions may be available, but if they cost too much they will not be used There is a constant need to continue to drive down the cost of telecommunications services and applications for global business solutions if they are to be widely used. AT&T accomplishes this through the innovation and application of new technologies. Finally, language is a barrier to communications. It would be wonderful if we could speak all the languages that exist but we know that is not going to happen. Therefore, we need to rely upon machines to provide a real-time translation function. In fact, we even need to convert between the languages (protocols) that machines access. This is most straightforward when we have the same standards, but a common alternative is being able to interwork between the standards of one region or one set of applications to those of another.

AT&T certainly is not the sole possessor of modern telecommunications technology. But I do believe we are a technology leader and understand the broad spectrum of applicable technologies for communications and information systems, as well as anyone in the world.

In forging new links with developing countries, we must understand both the immediate needs and the development pace of the countries. In many cases, accelerated development of infrastructure will require leap frogging some of the steps that have been taken by the more established telecommunications providers. The fundamental building block technologies: photonics, integrated circuits, and software - are the same for all. But when we examine the telecommunications needs for developing countries some things stand out: the need to protect investment, that is, to be able to have network designs that are evolvable so that investments made today are still valuable throughout the decade ahead. They need low entry costs so that they can get started quickly, even if not with the most complex systems, and tie into the global communications infrastructure which is emerging throughout the world. Standard interfaces between different vendor equipment, between different regional networks, between the old and the new, and between those things that are being deployed today and those things that exist in other networks throughout the world are essential. Very immediate is the need for service improvement: better call completion, reexamination of network design, high utilization, and improvement in quality. Technologies already exist for meeting these needs. Figure 2 depicts many things that are being requested by multinational business customers. Telecommunications service providers must provide the interconnectivity and support these needs, or these multinational business customers will seek other solutions. Thus, providers around the world are working together to provide a worldwide intelligent network. A fundamental need of this network is reliable transport which is being provided on a mesh of lightwave systems. A view of the fiber optic systems that will be in place by 1996 in the Pacific Region is shown in Figure 3. AT&T has part ownership in most of these cables and also is very active in the laying of cable systems and the maintenance of cables when they are in place using a

fleet of state-of-the-art cable ships. The capacity and sophistication of these cables is increasing rapidly. TPC 5, for example, you will note is a loop system for service continuity protection which will operate synchronously at 4.8 Gb per sec. This transport infrastructure is used to support a worldwide intelligent network, the architecture of which is shown in Figure 4. This architecture features intelligent switches, intelligent data bases, and powerful out-of-band signaling capabilities which tie together through standard interface capabilities in countries throughout the world. It is crucial that the developing nations design their networks such that they too will interface seamlessly into this architecture and, therefore, enrich it and build upon it.

We have a vision of what this kind of structure will do if we create and manage it properly. AT&T's vision is to bring people and information together anytime, anywhere. We see today's communications networks whether they be land based telecommunication networks, national networks, regional networks, cellular networks, paging networks, or international gateways coming together into integrated communications networks that exhibit intelligence, flexibility, and simplicity. Looking ahead to the next tier of technologies beyond the building blocks of photonics, integrated circuits, micro-processors, and software, we have to recognize there will be extensive wireless connections, as well as, wired connections. Messaging will play a major role; visual communication will be far more important than it has ever been in the past; networked computing will tie all of these various capabilities together; and voice and audio processing will be one of the keys that leads to what I call another fundamental building block area: ease of use. It is the ease of access, distribution, availability, and extracting of information from the masses of data with which we are surrounded.

Wireless communications depend integrally on signal compression and processing; low power, high speed processors, compact low cost power systems, intelligent networking, and mobility management. Of course, there are other things required as well, but these are core. Messaging also requires signal compression and processing; low power, high speed IC's; and, in addition, image and speech recognition and store and forward network capabilities. Recall the need for overcoming not only the space but also the time barrier. Visual communications are at the heart of multimedia communication. They again require signal compression and processing but depend strongly upon the global digital networks, the capabilities for integration and global interoperative standards. I cannot over-emphasize the importance of planning around standards as the developing nations of the world put their communications networks in place and interwork them or interconnect them with the framework which is already beginning globally.

Networked computing depends upon the interworking of communications protocols and the development of high efficiency protocols. It requires high speed global networks and scalable processors. Voice and audio processing enable us to do to speech recognition, speaker identification, and language translation. It is strongly founded on digital signal processors. These emerging growth applications - wireless, messaging, visual communication, networked computing, and voice and audio processing are summarized on Figure 5 and support the AT&T vision of bringing people and information together anytime, anywhere. There are some key technologies which make this increased accessibility and ease of use possible. One example is electronic neural networks. Neural networks marry the power of electronics, what we can do on a chip and biophysics with what we do in our brains and our neural systems. The result is a new computing architecture which is highly fault tolerant and massively parallel. Such chips are especially useful for complex problems such as speech recognition, image processing, pattern recognition, and so forth.

A second key capability is speech and video processing. If we examine the curves on Figure 6, we see two very obvious trends. One is that the number of components on a single chip is increasing by a factor of two every 18-24 months. At the same time, the capability of processing algorithms is improving at about the same rate. When we get to the point where a function can be performed on a signal chip, or simple circuit board such as speech synthesis on one chip in 1983 or limited capabilities speech recognition on a signal chip in 1992, then the applications for these functions begin to become widespread and thus more affordable. The issue is getting this significant functionality on one functioning board for a unit cost of about $100.00.

Thus, there are powerful technologies available to support the emerging applications. These applications will be needed by customers and users in all nations whether developed or developing. The developed nations today are well positioned to take advantage of these capabilities but the developing nations can also

be well positioned through careful planning, good network design, planning around standards, and partnering with technology providers as they build their telecommunications infrastructures. The driving force for having universal global network services is summarized on Figure 7 illustrating how we can bring user needs together with business objectives and the emerging technologies of the 1990's to realize the theme of this conference, namely, "Forging New Links".

FIGURE 1

GLOBAL BUSINESS SOLUTIONS

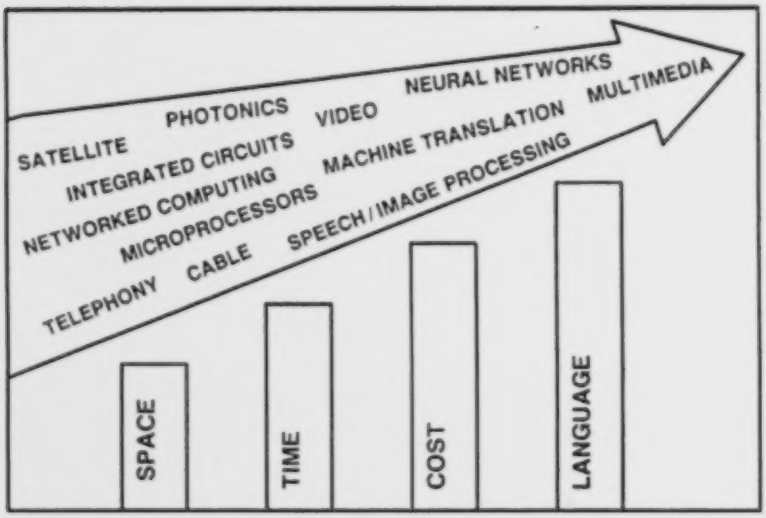

FIGURE 2

MULTINATIONAL BUSINESS CUSTOMER NEEDS

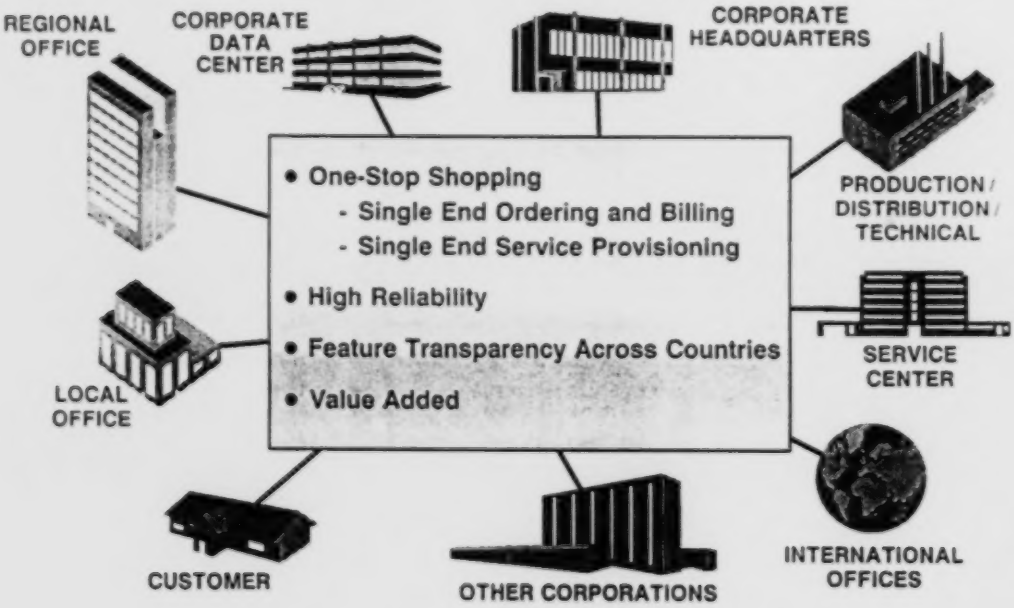

FIGURE 3

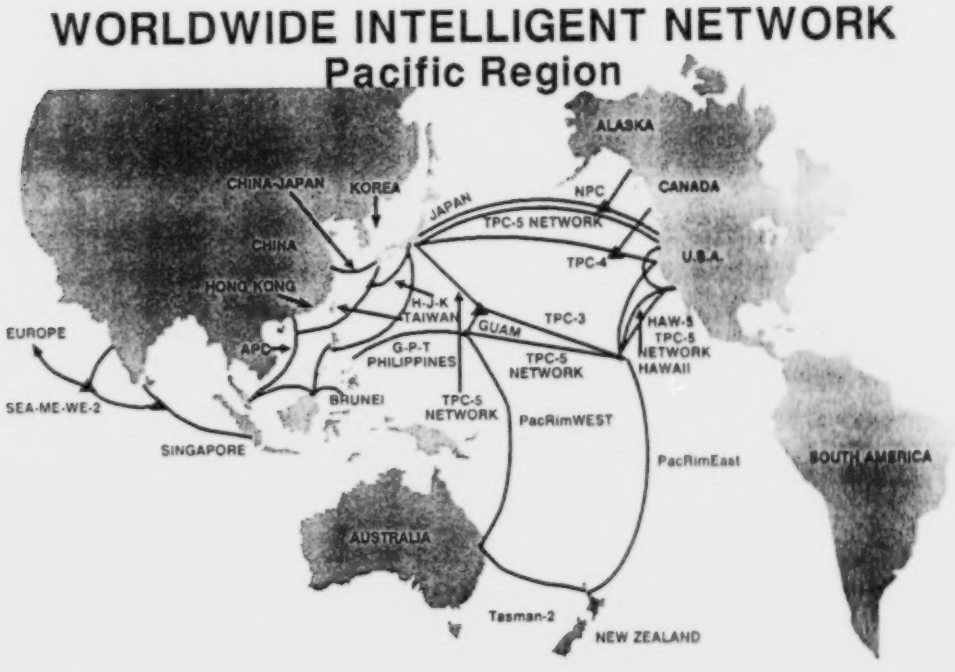

FIGURE 4

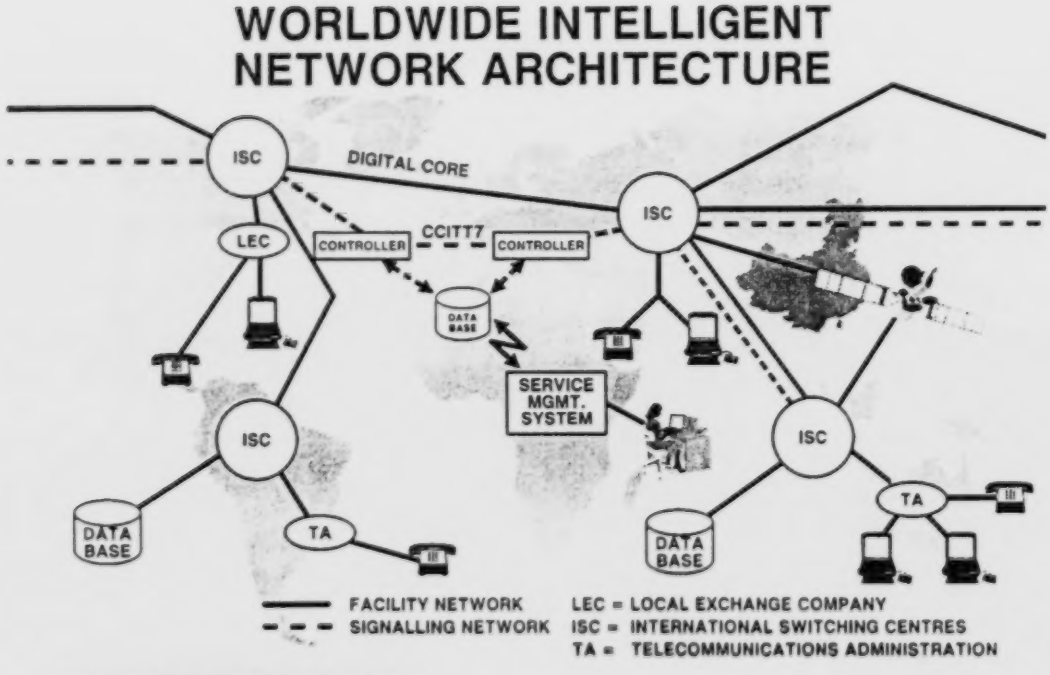

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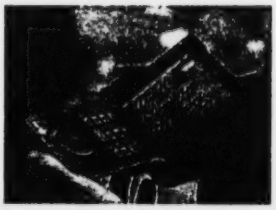
FIGURE 5

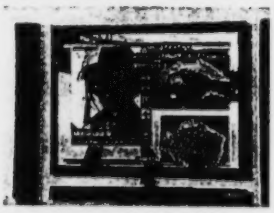
EMERGING GROWTH APPLICATIONS

WIRELESS COMMUNICATIONS

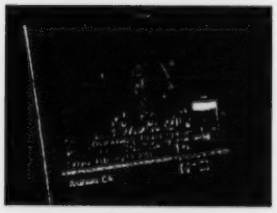


MESSAGING

VISUAL COMMUNICATIONS



NETWORKED COMPUTING



VOICE & AUDIO PROCESSING

FIGURE 6

TRENDS IN COMPONENT REQUIREMENTS FOR SPEECH PROCESSING FUNCTIONS

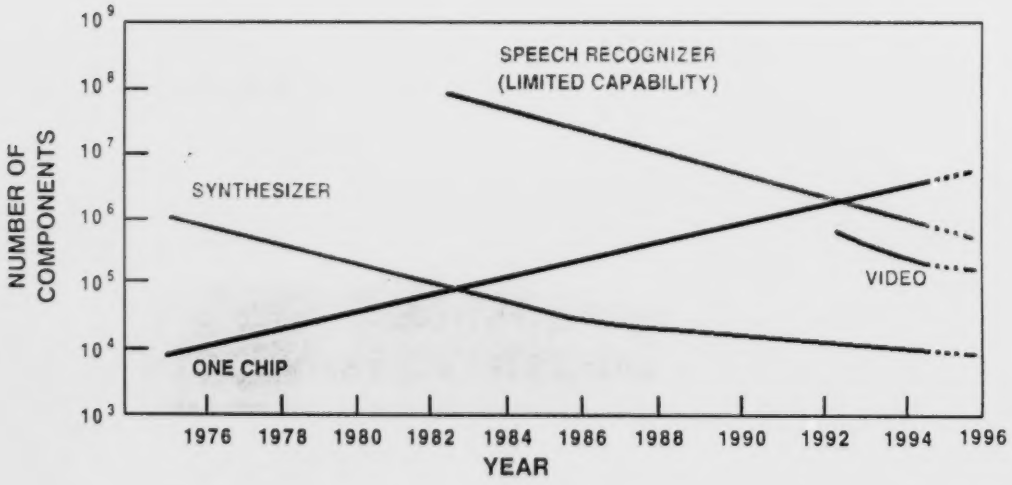
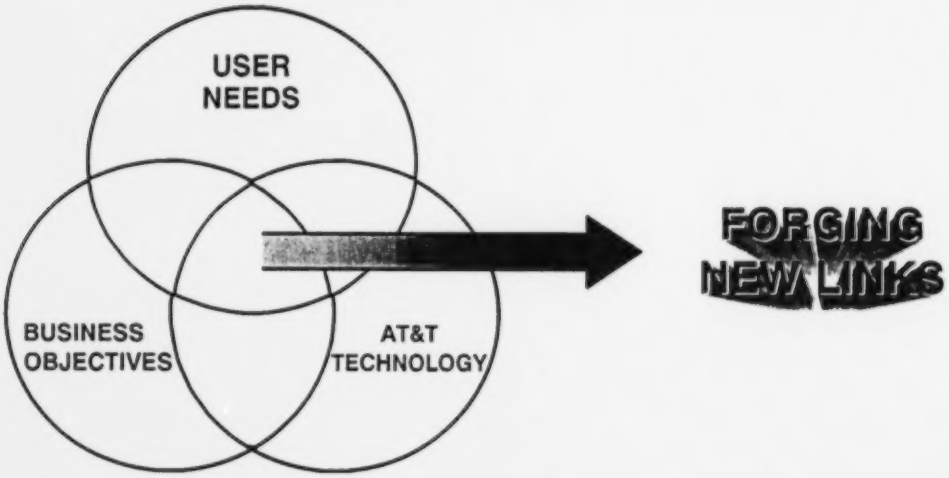


FIGURE 7

DRIVING FORCE OF GLOBAL NETWORK SERVICES



KDD's International Cooperation Activities

Under A Competitive Regime

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Abstract

The environment that surrounds the telecommunications business is changing at an ever faster pace. In the future, many corporations from developed countries are likely to increase international joint projects to improve the telecommunications in developing countries. These joint projects may be one approach of international cooperation, but they will not satisfy all of the requirements from developing countries, and it is necessary to fill the gap with the conventional, development-support approach.

The issue that those engaged in international cooperation activities will likely face in the future is how to achieve the suitable balance between the joint project approach and development-support approach and how to offer help that is suited to the communications situation in the correspondent country.

1. Background of International Cooperation Activities

1.1 International Telecommunications realized through International Cooperation

Now that the global structure of the East-West confrontation has collapsed, a harmonious and interdependent growth of developed and developing countries has become more important in building a stable international environment. One of the keys to this growth is the creation of international telecommunications networks that support free distribution of information among countries. In order to meet this need, it is necessary to bolster the developing countries' telecommunications facilities, including their domestic telecommunications networks, and services to a level comparable to that of developed countries.

On the other hand, telecommunications infrastructure in developing countries is obviously yet to be developed, as can be seen from the data in Fig.1, which shows the number of telephone lines for every 100 people in principal countries of the world. In other words, the shortage of telecommunication infrastructure for conveying information is causing the bottleneck in the economic development of developing countries. Urgently needed in these countries are measures to cope with the fast advancement and diversification of communication technology, particularly by securing the necessary funds and training personnel. Under the current situation, however, developing countries have no choice but to rely on international organizations and developed countries for financial aid.

Under these circumstances, it is an urgent matter for developed countries to provide technical aid to developing countries. After all, without improving domestic and international networks in developing countries, there will be no improvement in international telecommunications services also for the customers in developed countries. This paper inspects this vital issue.

1.2 Changing Forms of International Cooperation Activities

1.2.1 Conventional Cooperation Activities

As described above, international cooperation activities are becoming more important to improve international telecommunication in developing countries, but a form of cooperation must be fully examined also by developing countries.

There seems to be a deeply fixed notion that international cooperation refers to a handout given by a developed country to a developing country. This may have been true in the past, when a great majority of international cooperation was grant aid, or gratuitous cooperation led by a government of international organization. Such form of international cooperation can be considered as a one-way activity from developed countries to developing counties, by the form of supply with equipments, dispatch of experts and induction of trainees. Such conventional form of international cooperation activities shall be referred to in this text as **a development-support approach**.

1.2.2 New Forms of Cooperation Activities

Looking the environment of telecommunications business, the wave of deregulation and liberalization has spread in the world. The Asia-Pacific region is no exception, as competition has been introduced to the telecommunications market in a number of countries in the region. Such trends naturally have had a major impact on the conventional, development-support approach. Some private companies under the competition in the developed countries may not have a sufficient resource to grant an aid. Those companies also tend to get new business opportunities in the developing countries to survive the competition.

From the developing countries' point of view, on the other hand, the conventional development-support approach could not even satisfy their customers basic needs, to develop their communications network in the past. Therefore, developing countries need more active support from developed countries for the supply of resources such as personnel, goods and money.

Such changing needs of developed and developing countries have given birth to a new form of international cooperation activities. This is the cooperation activities undertaken as a business endeavor. For the developed countries' part, they provide, to develop the infrastructure in developing countries, know-how on technology, operation, development, marketing etc., learned from experience in business operation or from competition. Then, in return, the developed countries will obtain a part of the business profits from developing countries.

This new form of international cooperation activities, which may be referred to as **a joint project approach** through which both the developed countries and the developing countries benefit, is becoming increasingly active. Some of more common joint project approaches to international cooperation activities are BOT or BTO type and joint venture (JV) type.

BOT type refers to a cooperation activity where a carrier in a developed country builds the communications infrastructure (Build), recovers the investment, including profit, by operating the system for a fixed period of time (Operate), and then transfers the ownership of the system to a developing country (Transfer). In recent years, this type of activity has been widely introduced particularly in such Southeast Asian nations as Thailand and Vietnam.

The JV type is where the developed countries and developing countries jointly construct, own, and operate the communications infrastructure. This type of joint project requires greater participation and responsibility on the part of the developed countries than does BOT or BTO. Consequently, this case is limited by the extent of implementation of such liberalization policies in developing countries as privatisation, introduction of competition, and deregulation of foreign ownership. In recent years, the JV type has been popular in such fields as mobile communications, digital overlay network, and VSAT network as well as in basic communications.

The problems with the JV types are a long period of time necessary to recover investment, the political risk involving policy change, and currency convertibility. Despite these problems, these are win-win cooperation approaches where both sides benefit. Consequently, we will undoubtedly see more of this type of international cooperation activities in the future.

2. Overview of KDD's International Cooperation Activities

2.1. KDD's Basic Philosophy of International Cooperation Activities

International telecommunications business is extremely significant to the public society by providing services indispensable to everyone's daily life and economic activities. The business also carries extremely important responsibilities of providing equity of usage, ensuring service, network reliability and safeguarding privacy of users.

As described thus far, the environment surrounding the telecommunications business is rapidly changing. It is KDD's view, however, that the social responsibility of carriers basically remains the same in pertaining to international cooperation activities.

KDD, which has improved Japan's international telecommunications level up to the present level, fully recognizes our responsibility as a leading international telecommunications carrier of Japan. KDD takes pride in being expected to meet its responsibility of playing a role in international cooperation for developing countries.

Furthermore, it may be incident but extremely beneficial for KDD to create a "human network" with carriers and telecommunications administrations in other countries through international cooperation activities.

Fig. 1 Telephone Line Per 100 Population (1991)

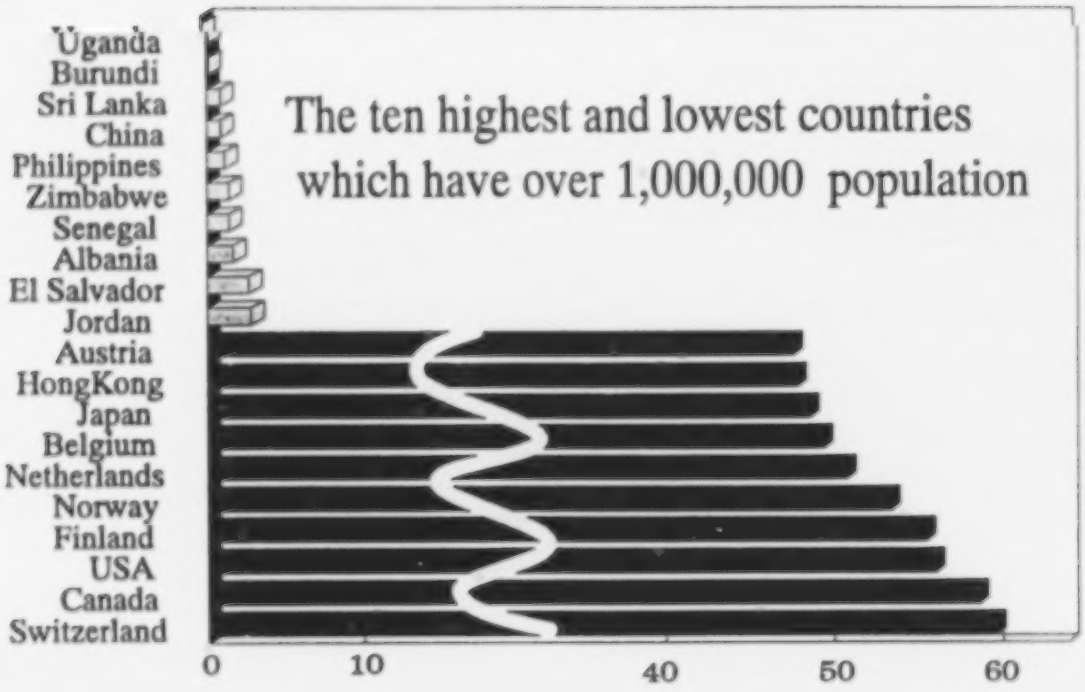
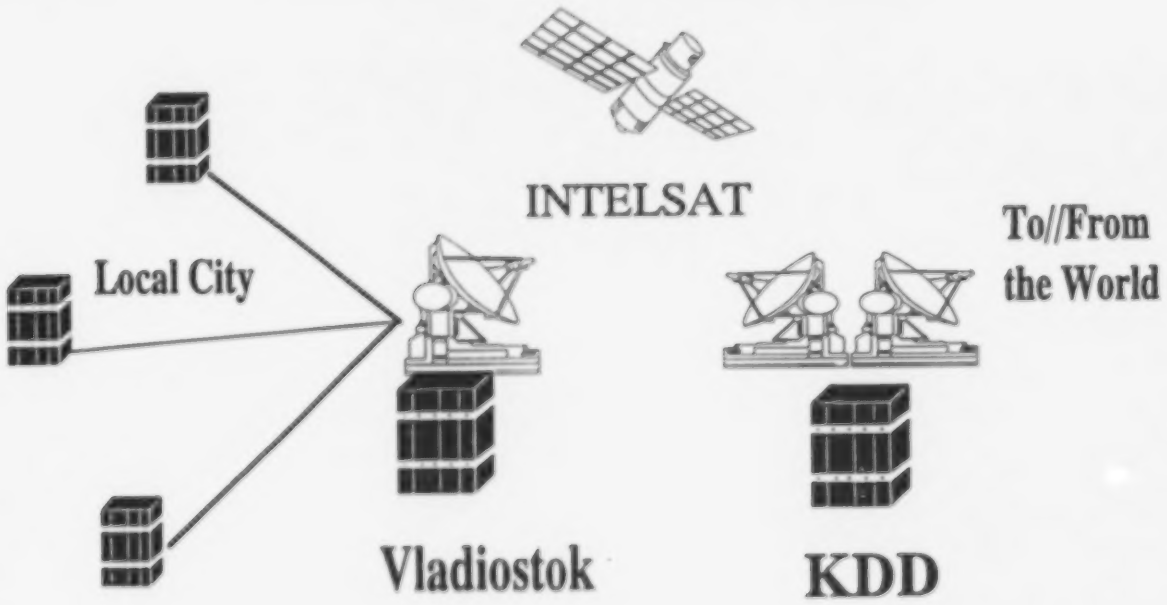


Fig. 2 Network Image of VTC



2.2 KDD's International Cooperation Activities

2.2.1 Example of KDD's Joint Project Approaches

To ensure smooth international telecommunications with the Far Eastern region of Russia, KDD, in a joint venture with a Russian private company, established in Vladivostok an international telecommunications company named VostokTelecom Co,. Ltd. (VTC) in June 1992 and commenced service in January 1993. By installing a satellite earth station and an international switching system in Vladivostok and establishing a direct link between Russia and KDD via INTELSAT satellite in the Pacific Ocean Region, VTC provides primarily business users in the region with international telephone services via dedicated networks (overlay). The network configuration of VTC is shown in Fig. 2.

International telecommunications between the Far Eastern region of Russia and Japan have not been satisfactory in the quality and connectivity. To improve the situation, KDD and InterdalTelecom(IDT), a telecommunications company in the Far Eastern region of Russia, proceeded with preparations for commencing international telephone service through satellite linkage.

To meet this requirement promptly it was concluded that Japanese capital and technological cooperation are most desirable, and KDD, together with Nissho Iwai Corporation and IDT established the joint venture VTC. This joint venture did not merely improve the telecommunications level of one region in Russia, but enabled the Far Eastern region of Russia to communicate with the entire world through Japan. Therefore, KDD is confident that the joint venture is very significant in terms of promoting the international exchange between Japan and Russia.

Based on KDD's experience in the start-up and operation of VTC, the advantages of the joint project approach of cooperation activities (joint venture type) are summarized as follows,

Firstly, our investment was carried out by the effort to achieve the maximum return while minimizing the risk since both joint venture partners have a stake in the project. VTC started its service only one year after the beginning of its feasibility study. This was made possible because each partner sought the most efficient solution to each problem based on its experience and knowledge.

Secondly, each partner saw the others as equal partners, and tried to understand the others' points of view. This attitude enabled the partners to reach amicable agreement on any given issue. lastly, since the cooperation activity respected the uniqueness of the region and satisfied the needs there, it was possible for KDD to easily put into practice its knowledge and experience in a foreign country. The knowledge of service development and sales that KDD has gained in the competitive environments in Japan will be sure to the good use at VTC.

2.2.2 Necessity of Development-Support Approach to International Cooperation Activities (Lessons Learned from VTC)

The joint project approach does have some shortcomings. As a consequent, it is not suitable for all the cases of international cooperation activities.

The first shortcoming of joint project approach is that there is little incentive to

invest in regions with little business prospect. Next, it is difficult to undertake development activities based on a long-term perspective since the joint project approach is expected to produce results faster than conventional international cooperation activities. This is not to say that joint project partners are short sighted. They do plan years ahead in the planning stage. It is debatable, however, whether an overlay network or a VSAT network bypassing outdated facilities would be of help in improving the fundamental telecommunications situation in that country. Likewise, a development limited to a certain region may not necessarily contribute to the development of the country as a whole.

Consequently, KDD, with its responsibility to serve the public, feels that the development-support approach to international cooperation is still essential now and in the future, even when the environment surrounding telecommunications is undergoing rapid changes and the joint project approach may seem to be the major approach. KDD intends to step up its efforts in this approach of cooperation.

2.2.3 Example of KDD's Development-Support Approach to International Cooperation Activities

KDD has undertaken much of its development-support approach to international cooperation activities in the form of cooperation to the Official Development Assistance (ODA). In addition, KDD began its own activity when it invited overseas trainees from Thailand in 1957. This own international cooperation activity was on voluntary base, as it was required for the need to improve telecommunications services and their quality. Therefore, it provided the correspondent country with great help in important areas to be served as the foundation for future development.

KDD's development-support approach to international cooperation activity is begun by analyzing with the correspondent country the particular needs of that country. After deciding on the best solutions matching these needs, KDD invites overseas trainees, dispatches experts, supplies and lends equipment, exchange personnel based on a memorandum of technical cooperation, and so on.

In the field of consulting, KDD helps the correspondent country in such projects as the construction of improvement of a telecommunications network by providing assistance from a planning to an operation stage. This is how KDD has contributed to the improvement of services in a number of countries.

A prime example of success with such activity is a project that was recently completed in Mongolia. KDD helped to construct an international digital telephone switching system, an earth station accessing INTELSAT satellite, and a terrestrial microwave transmission network connecting the earth station with the switching system.

In the last ten years, KDD has invited some 1,000 trainees, dispatched more than 400 experts, supplied and lent equipment to 65 projects in 4 countries, exchanged more then 1,000 personnel based on technical cooperation agreement with 19 telecommunications administrations and entities of 16 countries, and provided consulting in 23 countries.

3. Conclusion

As the environment surrounding telecommunications business is changing very rapidly, many corporations including international telecommunications carriers of developed countries tend to put their priority of international cooperation on the joint project approach in order to seek for new business and customers.

While the joint project approach may serve as an effective means of promoting the improvement of telecommunications infrastructure in a correspondent country, as described above, this approach cannot cover all of the needs for international cooperation activities. Therefore, the development-support approach must be used to supplement those areas that cannot be covered with the joint project approach.

Therefore, the issue for international cooperation activities in the future is how to achieve the suitable balance between the joint project approach and development-support approach and how to engage in activities that are suited to the telecommunications situation in the correspondent country. The business philosophy of corporations who are eager to invest in the joint project of telecommunication in developing countries should take into account this issue.

Ten years have already passed since the publication of "The Missing Link", a report on the activities by the Independent Commission for World wide Telecommunications Development led by Sir Donald Maitland. Based on the recognition that telecommunications infrastructure is an essential element for the socioeconomic development of all countries, it was advocated that developed countries and developing countries should strive to correct the South-North disparity in telecommunications infrastructure. However, this disparity is greater today than it was ten years ago. In the step to another decade after The Missing Link, it is now time for those involved in the telecommunications business to reexamine how international cooperation activities should be.

TELECOMMUNICATIONS IN THE PACIFIC

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Chairman, Distinguished Delegates, Ladies and Gentlemen:

1. This morning I welcome this opportunity to contribute to the proceedings of this conference - PTC'94. Like previous meetings, this indeed is a very important gathering that brings together important players in the vital area of telecommunications - an area that in terminology terms is changing at an unprecedented rate. This is an appropriate time to also reflect on the changes that have taken place since the release in 1984 of the report of the Independent Commission for World-Wide Telecommunication Development, better known as the Missing Link Report. That report had as its basic message the vital importance of telecommunications in the development process and the obvious need to give it a high priority.

2. This conference is, therefore, an opportunity to see if this message is receiving adequate focus in the developing economies of the Asia Pacific Region. Coming from an organisation mandated to assist the countries in their development efforts, I consider it proper then that I reflect on the realities and imperatives of the Pacific part of the Asia Pacific Region.

3. In world terms the Pacific is a region of low population and low economic growth. Like other generalisations, there are exceptions. Papua New Guinea which joined APEC recently, has a population greater than New Zealand and a solid growth rate based on a wealth of natural resources which will ensure it will be one of the leading nations of our region in the next century.

4. There are other smaller countries like Solomon Islands and Vanuatu which have the population and resource base to achieve much better economic performance in the future, And there are, of course, some very small islands like Tuvalu, Cook islands and my own country, Kiribati, which can look forward to a reasonably bright future given sound government policies and the use of external aid to develop national capacity and to become more self-reliant.

5. While the countries are generally optimistic about the future, they recognise fully that there are a number of concerns that need addressing.

6. One concern is the alarmingly high population growth rate in many of the countries and the fact that this growth rate cannot be sustained in the long term. In some of the smaller countries and indeed in the urban areas of the region, the governments are under pressure to maintain the present level of services not to mention the need to improve the living standards of their people. Controlling the population growth rate, consistent with economic developments and rising standards of living is the most important imperative. While regional organisations like the Forum Secretariat can play a part - it is recognised the primary responsibility rests at the national level.

7. Closely related to population are the concerns about the deterioration of the environment. The concern about the environment is of course not confined to the Pacific Island Countries. It is a world-wide concern, and the Rio Meeting last year is an example of the world coming together in facing a common threat. For most of the Forum Island Countries, however, this is a pressing one.

8. While there are aspects that are within the capacity of the countries to address, there are elements that are obviously outside their control. The most important one of these is the greenhouse effect. With the expected rise in the sea-level, some countries may well cease to exist. This is the prospect we fear and since the developed countries are primarily responsible through their high energy consumption, it is vital that they take appropriate steps to arrest the deterioration in the health of the environment.

9. The concerns, however, are not only confined to population and environmental issues. There is also the realisation that the benefits of the global economy we aspire to are increasingly dependent on modern and effective communications. Most of you do not need to be persuaded of the importance of telecommunication. It is the very life blood of commerce in the advanced economies of the world. For us in the region, we have no choice if we are to enhance our economic performance, but to focus more on developing our telecommunications network. This must be done in such a way for it to be affordable to the majority of our people.

10. Ten years ago Sir Donald Maitland and his Independent Commission of Enquiry were absolutely right when they pointed to the close links between social progress and economic growth on the one hand and investment in telecommunication infrastructure on the other. The "Missing Link" report included in its important findings the need for the developing world to give:

- higher priority to investment in telecommunications;
- greater recognition to the upgrading of the existing networks;
- the development of new and innovative methods of raising investment capital; and
- of an elective catalytic role, perhaps attached to the ITU, to inform and sensitise governments to the realities and imperatives of telecommunications industry.

11. That report was released in 1984 and since then a lot has certainly happened in telecommunications. The logical question for us to, therefore ask, is how does the South Pacific region measure up to these goals? Put in a more rhetorical form - is the Missing Link still missing?

12. At about the time that Sir Donald Maitland was gathering together his Independent Commission of Enquiry, the Forum Secretariat, with financial help from Australia and New Zealand, put together the South Pacific Telecommunications Development programme (the SPTDP).

13. It was inspired by the realisation that all our island countries had at last moved out of their colonial shadows and most had already in place, modern satellite links to connect their fledgling urban telephone networks with the rest of the world. The big gap, or the missing link if you will, was the almost total lack of telephone penetration into the rural and remote parts of out island countries. The SPTDP vision was for the regional organisation of the Forum Secretariat to attract the capital, and, with cooperating constituent countries, build a satellite based network which could penetrate the rural and remote communities.

14. It is a matter of record, of course. that this grand vision was not achieved. Although much very good work was done, the primary goal has proved to be elusive and so 10 years on we have conducted our own strategic study to determine what are the present realities and imperatives of telecommunications in our region.

15. We have called our study "The Pacific Link". Its main findings are:

- That the access gap which inhibits much of the Pacific Island people from connection to a modern telephone service remains as large now as it was 10 years ago. With the notable exceptions in one or two of our countries, current strategies are not working. New ones are required if the ideal of universal access to telephone service is to be achieved. In this region Universal Access does not necessarily mean a telephone in every household, as is the case in Western countries, but rather a publicly accessible telephone within not more than a one hour walk of any habitation;
- That there is a basic requirement to build institutional capability to enable the responsible Ministries to take effective control of national policy making and implementation of policy for the telecommunications sector;
- That, as many of our countries have moved to corporatise, and in some cases, even partially privatise their telecommunication carriers, there is a recognition that the varying interests of carriers and of governments can be accommodated in an effective way, and

- That there is a real need for carriers to respond to telecommunications users as customers rather than public service beneficiaries. In this context there is a real need for national carriers to plan together to meet the needs of business customers for international private networks. There is no carrier in the region which can properly serve these customers without cooperating with adjacent carriers.

16. Despite the work which has been done in the region over the last ten years the Missing Link is still missing. The access gap is still there. Also, while the efficiency of existing networks has been improved, and improved substantially in some cases much more needs to be done, particularly in the area of customer service. The problem of capital financing also remains unsolved for many countries.

17. The Pacific Link Study undertaken by the Forum Secretariat, has recommended that more capital finance should be raised from retained earnings of existing carriers, as well as by private capital raisings. However, for many countries the governments have become dependent on existing telecommunications sector cash flow for use elsewhere in the economy. Any change will, therefore, require a change in national priorities.

18. In many cases, however, modest increases in tariffs, and the deliberate managed growth in overall telecommunications business would solve both the Governments cash requirements and the carriers capital needs. Unfortunately, in some of our countries, the capital investment in telecommunications is often not the result of strategic planning at the Government level but is linked to the next available aid package in a loosely coordinated, or even uncoordinated aid environment. In other words, telecommunications development has often occurred in response to the availability of aid monies.

19. In all of these matters each country's individual social, political and economic environments and needs are unique. Regional solutions at the macro level are not possible. National responsibilities, and the individual country's ability to discharge those responsibilities are the paramount issues and the regional role is to seek and service well those opportunities and functions which can deliver real pay-offs if done regionally rather than nationally.

20. As in the countries of the Asian rim of the Pacific there is a wide disparity between the island countries of the Pacific.

21. Our regional telecommunications initiative in the Forum Secretariat can and do play a very useful role, but not a definitive one. Its future will depend very much on what our constituent countries want it to be, and certainly in the future it must become very much less dependent on regional aid funding than it has been in the past. The willingness of our constituents to contribute to its cost will become a determining factor.

22. I would like to end this statement by reaffirming the importance of telecommunications to development in this region. At the Forum Secretariat we have sought to assist our member Governments establish better communications links both internationally and between rural areas and island group.

23. We have also seen the important role that can be played by the international carriers and what we now must try and achieve is an effective marriage between national governments and the carriers to ensure that existing services can be sustained and new services established in the future.

Thank you.

PTC'94

16 - 20 January, 1994 : Honolulu, Hawaii

THE CO-ORDINATING ROLE OF APT IN PROMOTING TELECOMMUNICATIONS IN THE ASIA PACIFIC REGION

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1. Abstract

Asia Pacific is analogous to economic growth and telecommunications is accepted to be perhaps the single most important ingredient to fuel the forecast growth trends for the countries into the twenty first century.

APT has to rise up to the expectations of the Ministerial Declaration of Singapore 1992, and the ITU AS-RDC Resolutions to ensure that APT Members are aware of their rightful place in the process so that maximum benefits could be derived.

2. The Asia Pacific Teiecommunity

Founded in 1979 through an intergovernmental Agreement pursuant to Resolution 163(XXXII) of the Economic and Social Commission for the Asia and the Pacific, presently has 26 Members, 26 Affiliate Members and 3 Associate embers.

The Member Governments of the APT had recognized the need as stipulated in Article 32 of the ITU Convention of Malega Torimolinos 1973, and mandated APT to foster regional co-operation in attaining balanced development of telecommunications in the region, to assist in planning, programming, operations and maintenance of telecommunications networks and services, to promote the timely implementation of regional telecommunications networks, to assist Members in Human Resource Development and management; in. application and harmonization of telecommunications standards in the region, and to assist in the appropriate transfer of technology in the engineering and management of telecommunications systems.

3. The Role of APT

In a relatively short period of 15 years APT has, with the commitment of its Members, evolved into an effective Regional Organizations which is providing an extremely useful and practical platform for discussion and co-operation in wide ranging issues relating to telecommunications in the Asia and the Pacific.

The main purpose of APT, as stipulated in the constitution, is to promote balanced telecommunications development and the skills it demands in order to attain a high degree of regional self reliance in telecommunications. APT is uniquely placed to serve its Members through a comprehensive program of work that is funded primarily by the members themselves. Recently the scope of this program has broadened through the decision of UNDP to fund APT projects and programs, and by the enhanced collaboration of APT/ITU activities in the region.

The core activities of APT are Human Resource Development, Seminars, Study Groups' Activities, and Technical Assistance.

As mandated by the constitution and continually strengthened by the wishes of the Members through decisions made at forums such as the APT Ministerial Meeting in 1992, and the ITU Regional Development Conference in Singapore last year, APT will continue to be a key regional organization to assist the members in the development of telecommunications in their respective national networks as well as those with a regional dimension and to bring Pacific closer to Asia.

In view of the changing scene that is taking place in telecommunications in general, APT has started a new chapter in promoting co-operation between users and services providers, telecommunications equipment manufacturers and academic institutions. APT will attempt to bring together the industry and encourage initial cooperation among and between these different entities.

With the progressive introduction of more service providers in a given network and with the spread of liberal and competitive policies in telecommunications there would be an even greater need for a dialogue between Users, Regulators and Service Providers. APT will offer common ground for these important constituents of telecommunications to address current issues and to evolve practical recommendations.

4. The APT and ITU

With the economic growth trends in this region becoming more and more apparent, telecommunications development and investment in telecommunications infrastructures would be an area that calls for specific attention by all of us and this effort will extent well into the next century.

While finding sufficient funds for investment would be one of the most difficult issues to address, there are other policy and technical aspects of telecommunication that need attention very urgently. Amongst them are workable telecommunications standards, efficient use of the Radio Frequency Spectrum in terrestrial and space applications, transborder communications and the merging of telecoms, broadcasting and certain types of services trade. With the recent establishment of the ITU regional office in Bangkok (within walking distance of APT headquarters), it has opened the way for close cooperation between the two organizations in fulfilling the wishes of the members.

More importantly APT could assist ITU in its standardization activities, Radio Communications aspects, as well as development initiatives in the region. Training and developing human skills still remain the biggest challenge for us in the region. And in part because of the inadequate technical knowhow in a large part of the region.

5. The Focus of APT

While representing the majority of the world's population, having some of the poorest and some of the richest countries as Members and while addressing major telecommunications issues APT has to and does maintain a very specific focus. It is regional and it is telecommunications specific.

It is very pleasing to note that the Members of APT with a broad spectrum of economies, cultures and beliefs have still maintained this very essential focus. That is perhaps one of the most important reasons behind the success and momentum of APT. APT's seven professional staff with a regular budget of less than US$ 2,000,000.- is able to implement a tangible and practical program of assistance and co-operation only because this focus has been strictly maintained. We emphasize on practical regional and interregional programs. APT's strength also lies in the fact that participation in the decision making process involves practically all the Members through the Management Committee which meets once every year.

The other aspect of APT's collective participation is based on its philosophy of emphasizing on technical co-operation between and amongst the Members so that regional resources are utilized to their full potential before we look outside the region for help.

6. Direction for the Future

The Asian Pacific Region is going through phases of unprecedented change and socio-economic evolution. The role of telecommunications cannot be over emphasized, and it is very important that APT assist its Members to ensure that this process of evolution spells correct results in terms of policies, human resources development, application of technology and harmony with other national and regional development targets.

While there is a greatly enhanced agenda, coupled with more responsibility on the part of APT, it is becoming more and more apparent that continued close collaboration is necessary with other regional organizations, institutions and companies. We need to move away from some of the traditional restrictiveness and open up communication with as many "Partners in Progress" in order to serve the Members in the best possible manner. This means that regional telecommunications programs that are planned by organizations such as the ESCAP, ITU, UNDP as well as those by NGO's and business organizations should be linked closely with what we do in APT.

We all recognize the scarcity of financial resources available from multi-lateral donor agencies. UNDP funding alone will not be enough for the huge demand that will be placed on us. Thus it seems only right that maximum amount of co-ordination between organizations and other interested parties be attempted in order to minimize duplication of effort and optimize utilization of available resources. To this end, APT has initiated the process of consultation and co-ordination with other key regional organizations such as the SAARC, APEC and Forum Secretariat, in addition to the UN Specialized Agencies referred to earlier.

APT will be devoting a lot of energy to promote and improve this co-ordination process within the region.

We are confident that other organizations will also support and assist us in this effort. Not the least of course is the sincere desire on the part of the Members of the respective organizations and the management of corporations and companies to encourage and foster this unity for the ultimate regionalization of co-operation.

COMPATIBLE ROLES OF GOVERNMENT AND THE PRIVATE SECTOR IN FOSTERING TELECOMMUNICATION DEVELOPMENT

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Pacific Telecommunications Conference, Honolulu, January 16-20, 1994

1. ABSTRACT

Government and the private sector will have to co-operate more dynamically and strategically if, in a burgeoning global information economy and society, telecommunications and new information technologies are going to realize their potential for closing gaps in development. Governments cannot get completely out of the way and let the private sector do its stuff. Governments must, however, do a better job in (1) establishing telecommunication policies, regulatory structures and development goals, (2) spending more on the essentials of education, training of workers, and science and technology, and (3) making a greater effort to update "international rules of the road" to ensure that international telecommunications proceeds on a basis of co-operation, not conflict. The Asia-Pacific region, with great disparities in development but dynamism and creativity that are the envy of the world, should set an example of co-operation for the rest of the world.

2.. THE CHALLENGE

A formidable challenge faces the world's telecommunication sector - governments and the private sector, but also researchers, academics and global and regional organizations and agencies: how, in a burgeoning global information economy and society, to ensure that telecommunications and new information technologies realize their potential for closing gaps in development, and do not have the unintended effect of perpetuating or even exacerbating gaps between "haves" and "have-nots". There is certainly no conspiracy at play to maintain any communications monopoly. It is not, in fact, naive to declare that, viewed from a perspective detached from the "hurly burly" of technological, commercial and geographic rivalries, there is a great deal of good will, even altruism, in the telecommunications community. This good will, however, must be harnessed in creative ways to foster development. In a

rapidly changing telecommunication environment, this requires government and the private sector to play dynamic but compatible roles.

There is a growing recognition, beyond the telecommunication sector, of the essential role of communications, and its facilitative telecommunications component, in opening formerly closed societies and in fuelling economic, social and cultural activity. Recent trade agreements - the Canada-U.S. Free Trade Agreement (FTA), the North American Free Trade Agreement (NAFTA), which includes Mexico, and the proposed General Agreement on Trade in Services (GATS) - recognize telecommunications not only as a dynamic area of economic activity in its own right but as a sector underlying most economic activity and facilitating all trade. Unfortunately, however, in spite of a growing number of success stories, too many governments and international, regional and bilateral development and investment agencies still treat telecommunications in a rather ad hoc fashion and have not yet given it the priority that it deserves.

Although there is some evidence that the "telecommunications gap" between high and low income nations has narrowed over time, the low income countries, with about 55% of the world's population, still have less than 5 % of global telephone lines (1). In the dynamic Asia-Pacific region, there is some convergence between the medium teledensity countries, those with between 1 and 10 telephone lines per 100 inhabitants such as Malaysia, the Philippines, Thailand and most of the Pacific and Indian Ocean islands, and the high teledensity countries, those with above 10 lines such as Japan, Australia, New Zealand, Singapore, The Republic of Korea, Taiwan, Hong Kong and Macau. There is, however, arguably a growing divergence between the medium teledensity countries and low teledensity countries, those with less than 1line. The investment required in the region to reach a teledensity of 10 lines would be almost 400 billion U.S. dollars (2). Only about 5% of the resources required for telecommunication development can be expected to come from multilateral sources and about 25% from bilateral and commercial arrangements. Most investment must be generated internally (3). Success will, therefore, be a reflection of a government's commitment to telecommunication development and of its ability to tailor its telecommunication policies to its specific requirements.

3. THE CANADIAN EXPERIENCE

Canada is living proof of the extent to which telecommunications, and a mutually- reinforcing partnership of government and the private sector, can contribute to bridging gaps in development. Canadians have always had to be at the leading edge of new technological developments and practical applications. Succeeding Canadian governments have been committed to "universal service" - bringing, to our vast rural and remote areas, the same high level of services available in our population centres.

As someone who has been privileged to serve as Canadian Ambassador in Washington, I dare to say that the Canada-U.S. communications relationship is the most complex and sophisticated such relationship between any two countries in the world. Without an "electronic highway" binding Canadians together, and a core of distinctively Canadian services, data, information and cultural products flowing along this highway, we would have succumbed long ago to the magnetic pull from our good neighbour to the South. We have, however, managed to enjoy the benefits of the most advanced forms of telecommunications while preserving a uniquely Canadian quality of service and keeping Canadian companies in the forefront of technological development.

How to remain open to the best that the world has to offer, while preserving Canada as a viable and distinct country, has been a continuing Canadian challenge. And never more so than today. Canada continues to have an operating telecommunication system which is second to none. In an era, however, of accelerating global services and alliances, technological advances, digitisation, convergence of technologies, privatization and competition, Canadian companies will be able to continue to keep pace only if they are allowed to operate at home in a regulatory environment that encourages innovation and entrepreneurship to the same extent as in other leading countries. My parent company may have been a reluctant debutante before submitting to the charms of competition. Now that we are ready to compete enthusiastically, however, we cannot be expected to do so with our hands tied behind our backs due to overly restrictive domestic regulations, when our counterparts in other countries, as well as our competitors in our own country, will not be under the same constraints.

In this information age, we increasingly live in a world without walls. Traditional means of preserving "sovereignty" will, therefore, no longer work. Regulatory regimes must accept and adapt to this reality. In Canada we are fortunate to have new Telecommunication and Broadcasting Acts. Both are "technologically neutral" in that they anticipate technological advances and convergence. Both Acts give the Government the power to direct the "arm's-length" regulator, the Canadian Radio-television and Telecommunications Commission (CRTC), on questions of general policy and principle, and give the CRTC the power to "forbear" from regulating if there is sufficient competition. There is a need for further evolution and adaptation of the Canadian communications system and for the Government to join with the private sector in building a new information highway.

The Government and CRTC could start by removing some outdated obstacles. Why, for instance, should my company not be able to invest in cable in our own country as we can in the United States and United Kingdom? The current regulatory review in Canada offers an opportunity to correct this kind of anomaly and establish a framework that stimulates rather than retards the production and delivery of innovative services and technologies. It is not surprising that the most dynamic environments for new telecommunication applications also have the most open regimes for regulation and investment.

4. GOVERNMENT AND THE PRIVATE SECTOR

What are compatible roles of government and the private sector in fostering telecommunication development? With thirty years of experience in government and only one in the private sector, I might not be regarded as the person best qualified to comment. When I made my plunge into the private sector, I was smart enough to choose telecmmunications, a dynamic and rapidly expanding field. I did not do so, however, because I was jaded by my experience in government. I have not yet become so "gung ho" that I believe that government should get completely out of the way and let the private sector do its stuff. To quote Larry Summers, former chief economist at the World Bank and now a senior official in the Clinton Administration: "The 1980s were the decade of getting government out of the activities it cannot do well; the 1990s will be the decade to let government do well the activities only governments can do".

To foster telecommunication development and create an environment in which the private sector can play its full part, what must governments do well, or at least better?

First: Establishing Goals, Policies and Structures

Governments should establish telecommunication policies, regulatory structures and development goals and milestones that reflect not only domestic requirements and aspirations but also regional and global realities. In reaching a consensus on what these policies and goals should be, the private sector, and business and individual users, should be fully consulted. There is no magic formula applicable to all countries. Recent experience in Eastern Europe has shown that "overlay networks" may be a "quick fix" but only as part of coherent long-term policies. The amount of liberalization, competition and privatization introduced should be compatible with national goals of improving service to underserved areas. The degree of privatization or of allowing state-run service operators to be run as businesses, and of competition in particular services, should reflect the requirements for generating resources for development. In other words, businesses need to generate profits as well as services.

Experience in the Asia-Pacific region demonstrates that success is a reflection of a government's commitment to making progress in telecommunication development, and that investment in telecommunication development, as a percentage of revenue generated, should be at least 40% and preferrably much higher (4). In many cases, it will be desirable to encourage foreign investment in basic infrastructure and services. Blanket restrictions on foreign investment only restrict the development of telecommunication services which are vital to economic growth. National sovereignty, far from being compromised by foreign investment, can be enhanced by the economic stimulus in an increasingly global economy and can be safeguarded by regulation or in the arrangements concerning foreign equity. This

places added importance on having an effective regulatory system. In most situations, an "arm's-length" regulator will prove more effective, in implementing the government's policy directives, than a regulator more susceptible to political pressures.

Second: Spending on Essentials

The "entitlement" mentality, which is creating havoc with public expenditures in many countries, must be replaced by an "essentials" mentality geared to the needs of the future, not the special interests of the past. Thus, while continuing to reduce budget deficits, governments in both developed and developing countries should ensure that they do not stop spending on certain essentials, including education, training of workers, and science and technology. Governments should place an increased emphasis on human resource development so that their citizens will be able to thrive in the information economy and society. Development of the necessary technological and creative skills will, of course, require a continuing partnership between government and the private sector.

The World Bank, in its recent study of "the East Asian Miracle", found that the eight East Asian "superstars" (Hong Kong, Indonesia, Japan, Malaysia, Singapore, Republic of Korea, Thailand and Taiwan) all invested heavily in education and kept their economies more open to foreign technology than most other countries (5).

Third: Updating "International Rules of the Road"

Governments, with the support of the private sector, must make a greater effort to update "international rules of the road" that will ensure that international telecommunications proceeds on a basis of co-operation, not conflict. This is essential in a global information economy and society where borders are becoming anachronisms. The major players are trying to outdo each other in creating bigger and better "electronic highways". This competition will be healthy if it leads to an open "network of networks".

The rules should anticipate, not restrict, technological change and be flexible enough to be effective in an environment of increasing convergence of information technologies. They should establish a "level playing field" that will encourage enlightened "have-not" countries to catch up, rather than perpetuate some countries as "more equal than others". The trade rules should be compatible with the technical regulations designed to facilitate interconnection and interoperability. To take advantage of the dynamism of the private sector in fostering telecommunication development, the rules should ensure a hospitable climate for foreign investment, one that rewards initiative and risk-taking.

We have all been participating in or marvelling at the growing web of international strategic partnerships and alliances, which is involving an increasing number of telecommunication organizations around the world in new and at times unexpected combinations. I trust that this new phenomenon will turn out to be a positive response to the challenges of globalization and development. Not surprisingly, however, some are expressing fear that new monopolies, even oligopolies, may replace the old monopolies (6). The rules must ensure that the "network of networks" that results from the current outpouring of entrepreneurial vigour remains open to all who are prepared to play by the rules and are truly competitive.

Of course, to facilitate the elaboration and updating of these interlocking sets of "international rules of the road", we require effective multilateral intergovernmental and non-governmental organizations. Since it is unrealistic to envisage the creation of a new "one-stop shopping" international organization to deal with all the main issues of the global information society and economy, we have to make better use of existing organizations.

Are they up to the challenge? There are a number of encouraging signs that they are rising to the challenge. One can cite:

- the recent restructuring of the International Telecommunication Union (ITU) to adapt itself to the changing environment on a continuing basis;

- the Telecommunications Annex to the proposed General Agreement on Trade in Services (GATS) (assuming the successful conclusion of the Uruguay Round);

- the slow but steady progress of the European Union in liberalizing the telecommunication policies of its members;

- the positive contribution to expanding Asia-Pacific co-operation in telecommunications of regional organizations such as the Asia Pacific Telecommunity (APT), the Telecommunications Working Group of the Asia-Pacific Economic Cooperation (APEC) forum, and certainly the Pacific Telecommunications Council (PTC); and

- the recent upgrading of the Inter-American Telecommunications Commission (CITEL) under the Organization of American States (OAS).

But much remains to be done. My far from exhaustive list would include:

- enhancing the participation of the private sector and multi-national enterprises in the ITU and regional telecommunication organizations - the principle seems to be established but the details remain to be worked out;

- getting the existing global and regional organizations, including development and financing agencies, to work together more strategically to achieve practical goals according to an agreed division of labour - this is particularly true if these organizations are going to play a catalytic role in closing gaps in development; and

- ensuring that the ITU and GATT, or any World Trade Organization (WTO) that may emerge, work together collegially to keep the trade rules and technical telecommunication regulations in harmony. This will be particularly important in the ongoing negotiations, after the Uruguay Round, on trade in basic telecommunication services. By themselves, the ITU International Telecommunication Regulations, approved in Melbourne in December 1988, are so porous that they will not inhibit new international monopolies from emerging.

5. AN ASIA-PACIFIC PARTNERSHIP

Is it "pie in the sky" to call for a strategic partnership between government and the private sector, supported by reinvigorated global and regional organizations, to realize the potential of telecommunications to reduce gaps in development? As a relatively "new boy on the block", I have not yet become disillusioned. I can think of no more promising laboratory for putting this partnership into practice than my area of "first love", the Asia-Pacific region. Here we face great disparities in development but dynamism and creativity which are the envy of the world.

For this region to show the way, however, it will be necessary to transcend the circumstances that have reduced the collective impact of the main regional intergovernmental organizations. The United States and Canada, and soon Mexico and Chile, participate actively in the APEC Working Group on Telecommunications, but are not members of the APT. The APEC Working Group and the APT should work together more strategically, and co-operate more closely with the ITU and the main global, regional and bilateral development and financing agencies. The response to the challenges facing the region should not remain fragmented. We cannot afford to have these organizations manoeuvring like "ships passing in the night".

At the APEC meetings held in November in Seattle at the Head of Government and Ministerial levels, APEC Ministers recognized " the critical importance of modern telecommunications and information technologies to regional integration and cooperation" . They recommended, inter alia, that "the development and expansion of modern and compatible telecommunications infrastructure should be given a high priority in economic planning...", and that "human resource development, being critical for the operation and growth of modern telecommunication systems, should be given primary focus in the formulation of telecommunications policies and programs" (7).

The PTC - a non-governmental organization which includes the private sector, government representatives, the research and academic communities, and representatives of the main global and regional telecommunication organizations - should ensure that this vision applies not only to APEC participants but to all parts of the Asia-Pacific region. In that way we shall set an example of co-operation for the rest of the world.

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LET'S TAKE A RIDE ON THE INTERNATIONAL INFORMATION HIGHWAY

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ABSTRACT

While United States is gearing up to implement its Information Highway, more and more people are concerned with how it will impact our daily life. When and how will the changes start? How does it impact society, commerce and culture in the future?

The Information Highway is a new revolution which will impact not only our life, but also the social structure, business and cultural norms. Multi-media interactive broadband services, such as distance learning, Telecollaboration for distance joint development, and TeleMedicine, will be available for people on the Information Highway. These newly available services will create new businesses, new challenges, and new opportunities for us.

Do you go to the library? School? Shopping? Hospital? Work? It is possible, in the future you will be able to access the information or services you need any where, any time, and any place. You can stay home to check out a book (Electronic readable). You can attend classes at home and still can enjoy the discussion with the instructors. These are just some of the benefits of the International Information Highway.

Based on Mike's many years of communication business experience, he will discuss this multi-media revolution from the user, content provider, and distributor perspective.

The success of the information highway depends on a number of factors: regulations, technologies, public acceptance and the concept of universal access. Let's take a ride on the International Information Highway together.

TELECOMMUNICATIONS, CAPABILITIES AND DEVELOPMENT: TOWARDS AN INTEGRATED FRAMEWORK FOR DEVELOPMENT COMMUNICATION

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1. Introduction

There is a growing perception among developing countries that the rapid growth and spread of telecommunications is a vital component in the process of economic development. Many of them have embarked on the modernization of their telecommunication systems either through government initiatives or through the injection of private domestic or international competition. This drive toward sector expansion and restructuring is also being encouraged and supported by multi-lateral agencies operating in the development and telecommunications arena like the World Bank, ITU and UNCTAD.

The emerging interest in telecommunications is being fueled, at least in part, by growing evidence of the benefits of telecommunications for economic development. While the empirical evidence is mounting, not much has been done to examine the relationship between telecommunications and development from a theoretical standpoint. If telecommunications are to be placed at the core of the development process in third world countries, then the challenge to telecommunication scholars is to articulate a comprehensive and substantial theoretical framework to relate telecommunications to development and to specify the principles that should guide the formation and evaluation of telecommunication policies.

This paper attempts to respond to this challenge by developing an analytical framework for relating telecommunication policies to the process of development. It develops a definition of development based on the emerging focus on the expansion of people's capabilities, and forges a link between that definition and telecommunications through the concept of capability enhancement. The first part of the paper lays down the intellectual pre-history of the capabilities approach by reviewing the major theoretical developments in the study of development economics and development communications. The second part elaborates on the capabilities perspective and identifies its main components. The paper closes by describing the commonalties shared between the capabilities approach and emerging trends in theorizing on the relationship between development and communications. The paper recommends that the rapid and extensive provision of telecommunication services be a high priority for developing countries, not just for externally determined commercial or economic reasons, but because they are essential means for the people of developing countries to fully participate in the development process and significantly realize their own potential.

2. Economics and Development

Dissatisfaction with the results of developmental efforts in the Third World over the past four decades have led, in recent years, to a re-focusing and redefinition of the problems and strategies of development economics. In its earliest formulations, development economics viewed the problem of development as a problem of growth. The per capita gross national product (GNP/capita) was considered the appropriate measure of the level of development and the strategy of development aimed at boosting its growth rate (Henriot,1979). This strategy focused on the "creation of conditions for self-sustained growth in per capita GNP and the requisite modernization of economic, social and political structures implicit in the achievement of this goal" (Adelman, 1975, p. 306).

Consequently, the United Nation's First Development Decade (1960-1970) set a quantitative target of a five percent annual increase of GNP in developing countries. It is important to note that in this strategy for promoting development, the question of income distribution and equality were postponed. It was expected that an ever increasing output of goods and services will in fact mean increased national income which will "trickle down" to the masses. Moreover, the problems of development were seen to be primarily internal to developing countries, the result of local structures inadequate to the task of increasing GNP/capita. The impact of colonialism and its present-day legacy for underdevelopment were largely neglected. In terms of its own objectives, the strategy of growth-as-development was a remarkable success, achieving the U.N. target of an average GNP growth rate of 5 percent in the developing world (Owens and Shaw, 1972).

Yet even as early as the end of the 1960s it had become clear that this "development" was not changing the lives of ordinary people in terms of any reduction of poverty. Writing of the growth-as-development approach, Adelman (1975) noted, "[n]ot only is there no automatic trickle-down of the benefits of development; on the contrary, the development process leads typically to a trickleup in favor of the middle classes and the rich" (p. 302). Problems such as these led to the gradual emergence of an alternate view of how to define the problem of development. According to this view, the problem of development was not the pace of growth but the relationship any increase in GNP had to the poor -- especially the poorest 40 percent of the population in the developing countries. These poorest 40 percent were the marginals, people who neither contribute to the productivity of a nation nor share in the benefits of increased production (Henriot, 1979).

Growth-with-redistribution, therefore, was the official strategy of the Second Development Decade of the United Nations (1970-1980). However, even before that decade came to end, it had become clear that not much headway had been made in most of the developing world during the 1970s, particularly with regard to improvements in the quality of life of the vast majority of the peoples of these countries. Writing in 1979, Norman Hicks and Paul Streeten observed " the disappointment with GNP per head and its growth has led to a greater emphasis...on redistribution. But it was soon seen that...redistribution from growth yielded only very meager results "(p. 568). Moreover, similar to the first definition which emphasized growth alone, this growth-with-redistribution strategy also identified the problem of development as primarily internal to the developing countries. No effort was made in the analysis -- or in the consequent policy response recommended -- to place the problem of development in any kind of international context.

In contrast, a number of analysts, particularly from Latin American countries, preferred a definition of the problem of development which was much more historical in its emphasis upon the evolving relationships between developed and developing countries. They saw the focus of the problem not located principally within the developing world, but rather in the patterns of international economic interaction.[1] These scholars focused on the colonial relationships which have marked the history of the countries of Latin America, Asia and Africa. They argued that outside of an explicit recognition of the consequences of that relationship no accurate understanding of the present situation of these countries, characterized by "dependency" and "underdevelopment," is possible.

"Dependency" means that "the economy of certain countries is conditioned by the development and expansion of another economy to which the former is subjected...[t]he concept of dependence permits us to see the internal situations of these countries as part of the world economy" (Dos Santos, 1970, pp. 289-90). "Underdevelopment" refers to the process whereby a developing country steadily becomes integrated as a dependent unit into the world market through patterns of trade and/or investment. The production of that country becomes geared to the demands of the world market, in particular the demands dictated by the industrialized nations, with a lack of integration within the country between the various parts of its own domestic economy. The dependicistas strategy of development aimed at reducing dependency by taking greater control of the functioning of domestic economies and insulation from what they saw as the deleterious effects of external economic relationships. In its most extreme form, the specific policies aimed at these objectives involved delinking national economies from the world economy. In its more moderate manifestations this approach called for the reform of the international economic order (for example calling for a New International Economic Order) under the recognition that some degree of integration is essential for development.

Despite the ideological appeal of this conceptualization of the problem of development, efforts to validate many of the basic postulates of dependency theory,

particularly as explicators of continuing underdevelopment have had little success (Lall, 1975). The development performance of "export-oriented" countries like Japan, South Korea, Taiwan and Singapore is held out as a telling indictment of import-substitution, insulation and self-reliance -- the tactical offshoots of dependency theory. Technology importation, export orientation and above all integration into the world economy, it is argued, have been the underpinnings of the performance of these countries, which have been marked by high growth rates.

The failure to substantially improve the condition of the people of developing countries over the first two decades of the development process, encouraged the formulation of alternatives to these traditional definitions and strategies of development. The main responses have come from three very different directions. The first, which may be termed the basic or minimum needs approach, grew out of the earlier growth-with-redistribution strategy. The second approach, focusing on structural constraints, gets its inspiration from neomarxist and radical political-economy positions. The third perspective, increasingly influential in terms of deciding the future direction of development in general and the development of telecommunications in particular, emphasizes economic liberalization and deregulation characterized by privatization, the introduction of competition and reduction of the role of the state in economic affairs.

Within the mainstream of development economics, the failure of the growth-with-redistribution strategy of the 1970s has led to a shift in concerns to the eradication of absolute poverty, particularly by concentrating on basic human needs. Meeting these needs in health, education, food, water supply, sanitation and housing provides the new focus (Hicks and Streetan, 1979; Streetan, et. al., 1981). Basic needs are defined in terms of commodities (goods and services) required to achieve certain results (adequate nutrition, education, etc.; Sen, 1985). Its essential premise is that some needs can be satisfied only, or more effectively, through public services, through subsidized goods and services, or through transfer payments. Mere redistribution of income is not enough to ensure that these needs will be met and the consequences of not meeting these needs may be an increase in inequalities in income distribution.

Policies should, therefore, be directed toward the provision of those goods and services which meet basic needs and the yardstick for measuring the progress and effectiveness of development should be some index of the extent to which basic needs are fulfilled. For example, indicators of infant mortality, life expectancy and basic literacy have been used as the components of a composite "Physical Quality of Life Index" (PQLI) that is designed to measure results in the meeting of basic needs, rather than inputs such as income (Morris, 1979).

Neomarxist analysts of the development process argue that the process of development, in what are essentially capitalist economies, will lead to (and has in fact led to) the exacerbation of economic inequalities (Gurley, 1979). Whether due to the deliberate policies of governments controlled by domestic or foreign capitalist interests or due to the structural constraints imposed by the existing power structure in societies, the result of developmental efforts will be to promote the interests of the dominant classes to the detriment of the emerging proletariat or extant peasantry. Thus capitalism, or state capitalism as is usually the case in developing countries, produces polarization day in and day out (Amin, 1976). The only real path to development, from this position, lies in the radical redistribution of resources within developing societies. The redistribution of income or resources is impossible as long as the structure of power remains intact and inimical to the interests of the vast majority of people in these countries (Stewart and Streetan, 1979). Only through such "structural" changes can growth and equality be achieved.

The rise of economic liberalization as the primary engine of growth in developing countries is discussed by Albert Hirschman in an essay titled "The Rise and Decline of Development Economics." Hirschman (1981) argues that development economics, with its emphasis on the role of the state in promoting economic development, is on the decline, at least partially due to the re-establishment of neoclassical economics, both in theory and in application, at the forefront of national and international development. The market, it is argued, has the many virtues that standard neoclassical analysis has done so much to reveal, and state intervention could be harmful to the efficient operation of this "natural" domain of economic exchange. Moreover, state ownership, monopolization and/or regulation of economic activities detract from the establishment of a market equilibrium, promote inefficiencies in the allocation of resources, underprice capital and overprice labor, and encourage disguised unemployment (Gurley, 1979). Liberalization, deregulation and the promotion of competition (both domestic and international) are, consequently, the key to future development strategy.

To summarize, the slow pace of development efforts in the Third World in the '60s and '70s has led to the formulation of three main strategies to improve their economic performance: the basic needs approach, the structural reform approach and the liberalization approach. Despite their differences, they share a common weakness: the implicit or explicit exclusion of the people of developing countries from the development process. Development goals and objectives are exogenously determined and the people of these countries continue to be treated as objects of development rather than participants in the process of development. This overall theoretical trajectory is also approximated when we examine theoretical developments in the subdiscipline of development communications.

3. Communications and Development

Like the initial formulations of mainstream development economists, early communication scholars also tended to locate the roots of underdevelopment within developing countries. These endogenous causes, to which communication solutions were considered to exist, included traditional value systems, lack of innovativeness, lack of entrepreneurial ability and lack of a national consciousness. The problem was one of old ideas hindering the process of social change and modernization. As Rogers and Svenning (1969) asserted, "[d]evelopment is a type of social change in which new ideas are introduced into a social system."

Consequently, the role of communication in development was to provide an inlet for the flow of ideas. And what better way to do this then to utilize the relatively modern technology of mass communication. The role of the mass media was perceived at two levels. At the individual or community level they served, firstly, to introduce new ideas so as to overcome traditional normative and psychological barriers. Secondly, to promote the diffusion of innovations which could change traditional modes of economic activity (Rogers and Svenning, 1969).

At the societal level, the mass media were thought to aid in the process of national integration. The mass media were also considered an important instrument of social change. As Schramm (1964) argued "without adequate and effective communication, economic and social development will be retarded, and may be counter-productive. With adequate and effective communication, the pathways to change can be made easier and shorter" (p. ix).

With such emphasis being placed on overcoming behavioral and attitudinal obstacles to development through the injection of new ideas, it was inevitable that the early proponents of development communication promoted the growth of the mass media rather than telecommunications and emphasis was laid on the implementation of informational and motivational campaigns through mass media channels. The failure of these early approaches (commonly called the dominant or modernization paradigm) to foster development through communication has now been fairly well documented and the reasons for it outlined in some detail.[2] Its failure triggered three major responses, that paralleled the responses in development economics: the first from within the mainstream of the subdiscipline; the second from a neoclassical or market position; and the third from a structuralist or neomarxist perspective.

The reformulation of the main tenets and goals of development communication, within the mainstream of the sub-discipline, was put forward by Rogers and Schramm. Schramm (1972) led the way by admitting that, "[t]he Western model did not work as its proponents had expected." In 1976, Rogers announced the passing of the dominant paradigm" and attempted to redefine development as: a widely participatory process of social change in a society, intended to bring about social and material advancement including greater equality, freedom, and other valued qualities for the majority of the people through their gaining greater control over their own environment (p. 225).

In its shift in focus to the distributional effects of development, this reformulation was not unlike the growth-with-redistribution approach in development economics and its extension the basic-needs strategy. And in similar fashion it was quickly elevated to the position of the new orthodoxy in the development communication literature. Thus Hudson (1974) identifies the two fundamental aspects of development as: "provision of services to meet basic human needs, and shifting responsibility for such functions from trained outsiders to the people themselves" (p. 35). And Parker (1976) speaks of the reduction of economic disparities through the provision of increased opportunities through communications.

However, conceptualization of the role of telecommunications in development and the relationship between economic growth and development was hampered at the outset by the lack of past theorizing in this area. Though this shortfall in theory was never quite remedied, there emerged, soon enough, a proliferation of literature on the advantages of

promoting the growth of telecommunications in the development process.[3] These studies showed that telecommunications are vital to the ability to provide the "basic needs" that development economists are focusing upon and are, therefore, a vital infrastructure for development.

While these scholars take an "activist" stance toward the development of telecommunications, another set of scholars, influenced by the resurgence of neoclassical economics, call for the development of telecommunications in line with the operation of market forces. In contrast to the "activist" school, which implicitly or explicitly recognizes the role of the state in accelerated development of telecommunication facilities, this "market oriented" group argues that the introduction of privatization and competition are the most optimal ways to develop telecommunications and the growth of telecommunication services should take place in response to market demand.[4]

This view suggests that at least the demonstrated market demand for telecommunications should be met and that new technical applications should be provided when they are demonstrated to be the most cost-effective way to meet registered demand and to provide minimum telephone access to more remote areas (Saunders, et. al., 1983). Here again policy prescriptions take the place of a theoretical discussion because of an implicit or explicit assumption that telecommunications form a vital part of the national economic infrastructure and result in widespread benefits (ITU, 1976). The primary concern here is with the role of telecommunications as infrastructure for the successful conduct of commercial activities (including industrial production, provision of services, and trade) both domestic and international. Under the influence of this approach governments across the developing world are engaged in the process of restructuring their telecommunication sectors with aim of injecting market discipline and reducing the role of the State in the provision of telecommunication services.

Unlike the "activist" and "market-oriented" approaches just discussed, structuralist approaches are far from optimistic about the role of telecommunications in development. Their basic tenet is that communication processes cannot be seen in isolation from the societal arrangements under which they have developed and the structural constraints which determine both the outcome and the nature of the process through which they exert their influence. Structural constraints are defined as societal obstacles that restrict the opportunities of an important number of individuals to participate fully and equitably in the development process and in the sharing of benefits of a given social system (McAnany, 1980). In its more radical manifestations, this approach maintains that revolutionary structural and institutional reform must precede the introduction of telecommunications in developing countries. Thus Schiller (1989) argues that:

> [i]t is a mistake to believe that the changes required to overcome the global and local disparities in human existence will be facilitated by developing telecommunication systems...Only after sweeping changes inside dozens of nations, in which ages-old social relationships are uprooted and overturned, can the possibility of using new communication technologies for human advantage begin to be considered (p. 112).

A number of these scholars also pay close attention to the role of communications in the context of the structure of the asymmetrical relationships between developed and developing countries. The main foundations of the dependency approach in development communications are generally similar to those in development economics. The main thesis of these scholars is that the dependency relationship, including the communication aspect, has been historically imposed on the developing countries and external structural factors play a dominant role in determining underdevelopment. Therefore, it is necessary to remove the ways in which communication dependency is being maintained, as embodied in the call for a New World Information and Communication Order.

The preceding review of the development of theoretical positions in the sub-fields of development economics and development communications has traced how the earlier approaches in both gradually gave way to new perspectives. These perspectives have either extended the old orthodoxies or critiqued them from what may be termed radical, liberal or neoclassical perspectives. It is apparent that there is a wide divergence between these views as to what constitutes development and the strategies required to bring it about. The only commonalty remains their exclusion of any explicit articulation of the role the people of the developing world can play in the process of development and growth. The next section presents an alternate view of development, which integrates development and telecommunications within a single analytical framework. This capabilities centered approach is first detailed than compared and contrasted with some of the preceding and emerging development communication

paradigms.

4. Capabilities and Development

Despite forty years of developmental efforts in the third world, the tragic fact remains that the lives of most of the people of these countries fall far short of the minimum quality and standards of living that we should expect them to lead toward the end of the present millennium. One reason may well be that the principles which have guided the formulation of development strategies have excluded or marginalized the central participants in the development process -- the majority of the peoples of these countries. After reviewing the different conceptualizations of the process, strategies and indicators of development, it is argued here that the objectives of development may fruitfully be seen as the expansion of people's capabilities. First put forward by the Indian economist Amartya Sen, the capabilities approach focuses on "what people can do or can be" (Sen, 1981,p. 12) and development is seen as a process of emancipation from the conditions that limit the realization of the full potential of individuals, communities and societies.[5]

Central to this approach is the shift in focus from the expansion of goods and services to the expansion of capabilities. In one form or another, all the earlier approaches were concerned with the supply and distribution of goods and services. In modern consumer theory in economics, the nature of commodities has also been seen in terms of their "characteristics" (Gorman, 1956; Lancaster, 1966). For instance, rice has nutrition giving characteristics, but other characteristics as well, e.g., satisfying hunger, providing stimulation, meeting social conventions, offering the opportunity to get together, etc. (Douglas and Isherwood, 1979). Contrary to the contention of neoclassicists, not all these characteristics are easily or appropriately valued by the market, particularly when dealing with public goods such as telecommunications. Nor can all the characteristics be externally determined or predicted externally by the central economic planning mechanisms of the interventionist State. The capabilities approach overcomes these limitations by bringing the characteristics of the good or service and the characteristics of the users of the good or service, into the equation. In this approach a capability is defined as a feature of a participant in relation to a good or service (Sen, 1982).[6] This rather, simple sounding definition contains within it a number of different aspects.

There is the notion of a good -- its total and distributional availability; that of the different characteristics of the good; that of the functioning of a participant -and the limitations placed on it through either individual of social factors; and lastly, that of the fulfillment of a need (Sen, 1985). Taking the telephone as an example, the capabilities approach to development is concerned with whether or not the service is available. It is concerned with its characteristic as an information channel (and other characteristics, e.g., as a status symbol). It incorporates the use that participants can make of the service because of individual characteristics (age, gender, class, income, education, social relationships, values and beliefs) and social and cultural factors (community norms, access to other resources and the nature of the economic environment). And, it considers and incorporates the needs of participants, like the acquisition of desired information. The capabilities approach sees development as the outcome of the complex interrelationships between these factors. As the United Nations Development Program (UNDP) noted in its recent Human Development Report, 1990:

> Human development is a process of enlarging people's choices...Human development has two sides: the formation of human capabilities--such as improved health, knowledge, and skills--and the use people make of their acquired capabilities--for leisure, productive purposes or being active in cultural, social and political affairs. Development must, therefore, be more than just the expansion of income and wealth. Its focus must be people (p.10).

However, focusing on capabilities by themselves provides little indication of the ways to enhance capabilities and the relationship between capabilities and telecommunication policies. These require the development of an additional concept, one that would link policies to capabilities in a structured fashion -- this concept is termed capability enhancement.

5. Capability Enhancement

Capability enhancement may be defined as the objective against which development communication policies, plans and programs may be judged. It is, therefore both a prescriptive and an evaluative concept. It provides the guidelines for the formulation of development and telecommunication policies as well as the criterion for determining their success. The following paragraphs

lead up to a formal enumeration of the basic principles of capability enhancement.

It has already been discussed how economic development was thought of in terms of the expansion of the availability of goods and services in a country, as measured by the growth of GNP/capita. In fact, GNP/capita remains an important indicator of development even today. The World Bank classifies countries according to this criterion and GNP growth rates are still among the most oft quoted statistics in any discussion of development.

However, as Sen (1984) points out, while goods and services are valuable, they are not valuable in themselves. Their value rests on what people can do with these goods and services. If the capabilities of each person were positively related to the national availability of goods and services, then there would have been perhaps no great harm in focusing on the total supply of goods and services. But that assumption is a non-starter simply because, if for no other reason, the distribution of national income ensures that the ability to acquire control over those goods and services is highly skewed.

Sen (1983), provides the example of nutrition, arguing that the nutrition of people depends not merely on the national availability of food per head, but also on distributional characteristics of the supply of food. Hence the capability of a person to be well nourished cannot be identified or linked in a straight forward way with the national availability of food. Similarly, in the case of communications, the right of individuals to be informed and their right to access to communication facilities cannot be simply satisfied by increasing the number of media channels (TV/Radio Stations; Newspapers) or the number of telephones per hundred persons. Development, therefore, is not a matter, ultimately, of expanding supplies of commodities or services, but of enhancing the capabilities of people. The capability enhancement approach to telecommunications and development rests, therefore, on two axioms:

Axiom 1 A participant in the development process with access to telecommunications has greater potential for capability enhancement than one without.

Axiom 2 The realization of that potential is dependent upon the interaction of a) the characteristics of telecommunication services; b) the characteristics of the participant; and, c) the needs of the participant.

These Axioms give rise to Four Principles of Capability Enhancement with respect to telecommunications policies. These principles are laid down in a prescriptive manner but, as already pointed out, are as readily applicable as evaluative criteria.

I. Telecommunication policies should foster the growth of telecommunication services; and do so with the aim of narrowing differences in access to such services among different participants.

II. Telecommunication policies should identify the characteristics of the services being developed and the ways in which these characteristics may impact upon access and use of these services by different participants.

III. Telecommunication policies should identify how differences among participants may relate to access and use of telecommunication services

IV. Telecommunication policies should specify how different services satisfy the needs of different participants.

6. Four Principles of Capability Enhancement

I. Telecommunication policies should foster the growth of telecommunication services; and do so with the aim of narrowing differences in access to such services among different participants.

Two components of this principle bear elaboration. First, the need to focus on telecommunications and, second, the need to focus on distributional equity. As already indicated, most of the theoretical and empirical research in development communication has been conducted with respect to the impact of mass media or diffusion of innovations. Consequently, whether the work is in the now much maligned dominant paradigm or whether representative of one of the many extensions, modifications or critiques of this tradition, the role of communication in development is assessed almost entirely in relation to information which comes from outside of the unit of analysis. In similar fashion, much of the work in the emerging telecommunication and development field also focuses on the impact of telecommunication with respect to their ability to bring information from distant areas, usually from urban to rural areas. Information, information technology and communication processes are treated as exogenous to the development process.

More recently, some scholars have begun to formulate models in which communication plays an endogenous role in development. For example, the convergence theory of communication (Kincaid, 1988) views communication as "a dynamic process of convergence and social systems as networks of interconnected individuals who are linked by patterned flows of information" (Kincaid, 1988, p. 209). By extension, this paradigm enhances the role of interactive communication technologies, like telecommunications, in the development process. Kincaid maintains that the level of information that a society can support is a function of the amount of resources and time that it can devote to the processing and sharing of new information while maintaining the minimum amount of cultural cohesion necessary for sustaining the society. Modern telecommunications, which both increase the amount of energy that can be expended for information sharing and reduce the time, would enable a society to support higher levels of information and information sharing.

The capability enhancement perspective, shares with the convergence theory the notion of interactive communication as enhancing the potential for development. Therefore, it recognizes the importance of promoting the availability of telecommunications services in countries. But while the convergence theory treats the extent of interactive communication within a society as both necessary and sufficient for development, the capability approach views the availability and distribution of telecommunications as necessary but not sufficient for capability enhancement. That possibility is realizable only when telecommunication resources are distributed evenly within countries. Skewed distributions, whether vertical (e.g., class based) or horizontal (e.g., region based) may lead to the isolation and marginalization of deprived groups.

II. Telecommunication policies should identify the characteristics of the services being developed and the ways in which these characteristics may impact upon access and use of these services by different participants.

Most telecommunication projects treat the technical characteristics of the services being introduced as exogenous and independent of the development process. Issues of technological choice are usually left to engineers and accountants to determine. Evaluations of those projects rarely consider the impact of the particular technical configuration of the telecommunication service being examined in their analyses. However there is growing evidence that the nature of the telecommunication networks established in developing countries have a significant role in determining the trajectory of the development process.

Samarajiva and Shields (1990) point out that in most rural telecommunications project there is a privileging of "[t]technologies connecting geographically distant points (intercommunity linkages, usually metropolitan-hinterland linkages)" to the neglect of "those that connect geographically proximate points (intracommunity) linkages" (Samarajiva and Shields, 1990, p. 94). Hence satellite technology, like geo-stationary communication satellites and the VSAT (Very Small Aperture Terminals) networks are increasingly being deployed in many developing countries. By establishing long-distance rather than local telecommunications links, these technologies foster a developmental process in which the value and worth of people and what they have to say or do is judged in relation to their ability and desire to communicate outside of their immediate geographical communities.

In contrast, Samarajiva and Shields (1990) suggest that technologies like rural digital exchanges and Basic Exchange Telecommunications Radio Service (BERTS) may enhance the self-sufficiency and developmental potential of rural communities:

Participation is better served by strengthening local networks, enabling people in small communities to talk to each other easily, than by artificially creating privileged interlocutors through the institution of unequal and biased patterns of access to communication channels. Stronger local networks of communities will be able to participate more effectively in wider politico-economic relationships, a type of participation that is crucial to achieving equality and equity...(p. 99).

III. Telecommunication policies should identify how differences among participants may relate to access and use of telecommunications services.

This principle locates telecommunications in the economic, political and cultural context within which they are introduced. This contextualization is critical in determining the functioning of participants, i.e., their ability to access and use telecommunication services. We can identify three levels of analysis which relate to the functioning of participants. At the individual level participants can be distinguished along demographic, physical, cognitive and affective characteristics. For instance, there is evidence that telephone use in

developing countries is significantly lower among older individuals and among women (Saunders, et. al., 1983).

At the interpersonal/network level, the constraints imposed by family links or the opportunities provided by group membership may impact on participants' ability to access telecommunications services. For example, caste membership is an important determinant of whether or not individuals can make use of PCO facilities in four Indian villages (Sinha, forthcoming). At the institutional level, the nature of the organizational structures and institutional cultures shaping the introduction of telecommunications may effect its use and conditions of access. Mody (1985) provides the example of the introduction of radiotelephones in a Caribbean country with the aim of getting inputs and suggestions from extensions workers on a radio station's agricultural programming. The program failed because:

> [t]he logic of decentralization and an efficient distortion-free, bottom-up communication technology clearly clashed with the "social" logic of the prevailing bureaucratic power systems in the country, making the technology ineffective (pp. 135-136).

IV. Telecommunication policies should specify how different telecommunication services satisfy the needs of different participants.

The approach of meeting "basic needs" which has emerged as an important strategy of development (both for economists and for communication scholars), has some similarities with the capabilities approach. It views communication as a part of the process that ensures the "humanization of all human beings by the satisfaction of their needs for expression, creativity, equality and conviviality and to understand and master their own destiny" (Servaes, 1979, p. 49). But there are also significant differences between the basic needs and the capabilities approaches (Sen, 1985). First, "basic needs" are usually defined in terms of goods or services even though attention is paid to differences in the commodities needed by different persons to satisfy the same requirements. Thus the focus remains on commodities even though the contingent nature of commodity requirements is fully acknowledged (Streetan, 1981). But often the requirements for goods or services may not be at all derivable from a specified set of capabilities (Sen, 1985). For example, different combinations of media and telecommunication services and interpersonal networks, may satisfy the same level of information needs. It is possible, therefore, that though "basic needs" may be fulfilled, basic capabilities may remain unimproved.

Second, the notion of basic needs continues to view individuals as passive targets of development. The objective of fulfillment of basic needs leads to the asking of the question of what can be done for a person? While the capabilities approach leads to asking what can the person do? In other words it takes the articulation of needs by the participants in the development process as the starting point of policy formulation. In Storey's words (forthcoming):

> I believe that we, as theorists and practitioners, should back away somewhat from our interest in how to do things to people with communication and train our sights on the roles of communication in people's lives as they struggle with development...Our guiding question should perhaps be: How can we help people struggling with their own development to use communication for their own purposes and to speak with their own voices...."

7. Conclusions

The preceding discussion of the principles of capability enhancement has revealed how the capabilities approach shares many of the goals and strategies of participatory and dialogical development communication approaches that are now being enunciated by a number of communication scholars. Variously called the multiplicity paradigm (Servaes, 1989) Another Development (Melkote, 1991) the Communitarian Model (Tehranian., 1990) these approaches a strikingly similar in their basic conceptualization of the development communication process. First, as Storey (forthcoming) points out, they reject the "ahistorical reductionism of modernization theory as well as the social reductionism of dependency theory" to concentrate on developing multilevel theories of development communication focusing on "human communication within sociocultural, political and economic contexts". Second, they view both communication and development as processes aimed at expanding the opportunities or choices available to people (Apter, 1987; Narula and Pearce, 1986; Melkote, 1988). Third, they consider the ability of people to participate in the development process not only as a means for achieving developmental ends (from what Ascroft and Masilela, 1989, p.12, call the "participation-as-means approaches") but, more importantly as an empowering activity that should be viewed from a "participation-as-an-end approach" (Ascroft and Masilela, ibid.)

These perspectives have both critiqued and extended the old orthodoxies. While the earlier approaches focused mainly on growth and modernization through exogenous forces, the more recent approaches are based on the understanding that people can, and do, play an important role in the development process, as long as they are provided the resources and opportunities to fully participate in the lives of their nations. The role of governments, and by extension of the policies governments formulate to govern various sectors like telecommunications, must therefore be to ensure that the conditions necessary for such participation are available. In this context the concept of capability enhancement serves as a link-pin between development and telecommunications providing a yardstick for the formulation and evaluation of telecommunication policies. The concept of capability enhancement makes a strong argument for locating telecommunications at the core of development plans and programs, not just for externally determined economic or commercial objectives, but for providing the people of developing countries with the means to realize their own potential and participate fully in the process of the growth and development of their societies.

ENDNOTES

1. See Furtado (1972); Frand (1972); Dos Santos (1970) Wallerstein (1974).

2. See for instance Beltran, 1976; Narula and Pearce, 1986, Krippendorff, 1988; Hornik, 1988.

3. See for instance, Okundi (1975) Pool (1976) Parker (1978) Hudson (1984) Webber (1980) Kochen (1982).

4. See, for instance, Saunders, et. al. (1983) Nulty (1989) Wellenius (1989) Aronson and Cowhey (1988).

5. See Sen (1979, 1980, 1982, 1983 and 1985); UNDP (1990).

6. Participant refers to an individual, group, community, region or any other form of social and/or economic division which participates in the development process.

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